PB82-181629

# Pretreatment Resource Reader: A Compendium of Experience and Practical Knowledge for the Establishment of Local Programs

Association of Metropolitan Sewerage Agencies
Washington, DC

Prepared for

Environmental Protection Agency
Washington, DC

Feb 82

U.S. Department of Commerce
National Technical Information Service
NTIS

PB82-181629

# Pretreatment Resource Reader

## A Compendium of Experience and Practical Knowledge for the Establishment of Local Programs

By

ASSOCIATION OF METROPOLITAN SEWERAGE AGENCIES

Supported by a Grant from the

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA 22161

## EPA Disclaimer Statement

This report was funded by the U.S. Environmental Protection Agency as part of cooperative agreement No. CT 900977-01-3 with the Association of Metropolitan Sewerage Agencies. The primary purpose of the project was to foster the exchange of ideas and methods and to instruct the managers of publicly owned treatment works (POTWs) on the establishment of successful pretreatment programs. The contents of this report do not necessarily reflect the views and policies of the EPA nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

February 1982

50272-101

| | | | |
|---|---|---|---|
| **REPORT DOCUMENTATION PAGE** | 1. REPORT NO.<br>None | 2. | 3. Recipient's Accession No.<br>PB82 181629 |

4. Title and Subtitle
Pretreatment Resource Reader
- A Compendium of Experience and Practical Knowledge for the Establishment of Local Programs -

5. Report Date
February 1982 - Publication

6.
074065

7. Author(s)
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8. Performing Organization Rept. No.
None

9. Performing Organization Name and Address
Association of Metropolitan Sewerage Agencies
Suite 200
1015 - 18th Street, N.W.
Washington, D.C. 20036

10. Project/Task/Work Unit No.
None

11. Contract(C) or Grant(G) No.
(C)
(G) CT900977-01-3

12. Sponsoring Organization Name and Address
U.S. Environmental Protection Agency
Office of Water Enforcement and Permits (EN-336)
401 M Street, S.W.
Washington, D.C. 20460

13. Type of Report & Period Covered
Final

14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

Pretreatment programs are designed to control the introduction and quality of industrial wastewater. The Pretreatment Reader is an edited compendium of useful discussion papers written by and for the technical and management staffs of publicly owned water pollution control authorities. The Resource Reader is concerned with the organizational, financial, legal, and technical aspects of locally established pretreatment programs. Chapters are devoted to experiences in conducting effective industrial waste surveys, securing legal authorities, setting local effluent standards, design of monitoring systems, sludge disposal aspects, and other topics.

The Resource Reader is the outgrowth of a two year effort conducted by the Association of Metropolitan Sewerage Agencies and supported by a grant from the U.S. Environmental Protection Agency. Regional seminars and a national symposium were held to enable local agencies better understand the importance of pretreatment and the difficulties associated with it. It should be a valuable tool for agencies in the process of either developing or implementing a local pretreatment program.

17. Document Analysis a. Descriptors

b. Identifiers/Open-Ended Terms
Industrial Pretreatment, Pretreatment, Publicly Owned Treatment Works, Source Control, Water Pollution, Toxics Control

c. COSATI Field/Group

| | | |
|---|---|---|
| 18. Availability Statement:<br>Release Unlimited | 19. Security Class (This Report)<br>Unclassified | 21. No. of Pages |
| | 20. Security Class (This Page)<br>Unclassified | 22. Price |

(See ANSI-Z39.18)

See Instructions on Reverse

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

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# PREFACE

In 1972, the United States Congress mandated industrial users of municipal treatment systems to meet pretreatment standards with respect to any pollutants which might interfere with, pass through or otherwise be incompatible with the municipal treatment works. Ensuing legal complications slowed implementation of the program, and it was not until June 1978 that the U.S. Environmental Protection Agency published basic regulations specifying the type of pretreatment programs municipal-industrial systems would be required to adopt. The regulatory framework, which has yet to be finalized, is complex and requires the development and implementation of local programs, with primary emphasis on the control of toxic pollutants, no later than 1983.

To assist in the practical implementation of this major effort, the Environmental Protection Agency engaged the Association of Metropolitan Sewerage Agencies (AMSA) to conduct instructional seminars around the country to assist local wastewater treatment agencies in the practical implementation of national pretreatment objectives. As a component of this primary objective, AMSA prepared several case study analyses detailing how municipal-industrial systems were confronting the Agency's pretreatment program requirements.

The Pretreatment Resource Reader, a compilation of the papers and case studies presented at the seminars, is an outgrowth of this two year effort. Drawing on the knowledge and experience of the larger, more sophisticated water pollution control agencies, the Reader can serve as a valuable tool for accomplishing program objectives and goals. More important, it demonstrates that pretreatment is not a new concept and that the laudable environmental goals of the program will not be achieved in the halls of Congress and EPA, but rather by the dedication and cooperation of municipal and industrial professionals at the grassroots.

John Olson

Jon Olson
Chairman, AMSA Pretreatment Committee

# ACKNOWLEDGEMENTS

In cooperation with the Environmental Protection Agency, AMSA held a series of seminars in 1979 that emphasized the nuts and bolts of pretreatment implementation. In addition to providing municipal agencies with practical instruction on program development, these meetings served as invaluable forums to identify the critical issues impacting the development of cost-effective and environmentally sound industrial wastewater control programs.

At each regional meeting the AMSA faculty focused on how best to conduct an effective industrial waste survey; obtain sufficient legal authority; assess administrative and financial needs; set local standards; assess data collection and monitoring needs; and evaluate sludge and energy ramifications. Case study analyses prepared for the seminars provided a common thread tying these aspects of program development and implementation together.

The cooperation of all AMSA member agencies and subscribers who participated in the AMSA pretreatment seminar series is gratefully acknowledged.

The AMSA faculty warrants special mention because the Pretreatment Resource Reader reflects their vital contribution to the national pretreatment program and serves to demonstrate their valuable experience with and knowledge of the industrial wastewater control program.

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In addition, I would like to thank Ken Kirk of the AMSA staff in Washington, D.C., for serving as project manager in this endeavor. And my thanks also to Ron Linton, Executive Director of AMSA, for his unflagging support and cooperation.

K. Ray Harrington

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# CHAPTER 1

## THE PRETREATMENT REGULATORY FRAMEWORK

## INTRODUCTION

### THE FEDERAL PROGRAM

The Federal Water Pollution Control Act of 1972 completely revamped the United States' water pollution control effort. In addition to establishing a massive funding program for the construction of municipal treatment facilities necessary to meet the stringent requirements of the law, and requiring all dischargers to meet specific permit effluent limits, the Act was also designed to control municipal and industrial discharges of toxic pollutants into the waterways. These toxic controls, however, proved difficult to implement and it was not until 1977, after legal complications were resolved and the Act was amended, that the United States' Federally-mandated industrial wastewater control program began to take shape.

To implement the legislative mandate, U.S. EPA promulgated general pretreatment regulations on June 26, 1978. The regulations establish a framework for the application and enforcement of technology-based pretreatment standards for industrial wastes discharged into municipal systems. The primary objectives of the regulations are to prevent the introduction of pollutants into municipal systems that will interfere with plant operations and the use or disposal of municipal residues; to prevent the introduction of pollutants into municipal systems that will pass through the treatment works or otherwise be incompatible with the works; and to improve opportunities to recycle and reclaim wastewaters and sludges resulting from wastewater treatment.

The regulations envision two types of national pretreatment standards, general prohibitions and categorical standards, to achieve these objectives. The general prohibitions apply to all non-domestic users of municipal treatment works, regardless of whether they are subject to other standards. These standards control the discharge of materials that may create a fire or explosion hazard; corrosive material, including a no-discharge standard for pollutants with a pH of less than five; solid or viscous pollutants in amounts that would obstruct the flow of or interfere with plant operations; any pollutant, including BOD and SS, in volume or strength as to cause unit process upsets; and heat in amounts which will inhibit biological activity in the municipal facility.

The categorical standards complement the general prohibitions and specify quantities or concentrations of pollutants that existing or new industrial users in specific industrial subcategories may discharge or introduce to municipal facilities. When promulgated, these standards will deal only with toxic incompatible pollutants which are of great environmental concern because they occur in effluents, aquatic environments, and drinking water supplies; lead to immediate or long-term human health hazards under certain circumstances; or have toxic effects, at high concentrations, in human or aquatic organisms. Municipal authorities are authorized to request modification of the specified limits to account for removals achieved by the treatment works and industry can achieve a similar modification if it can show that its processes are fundamentally different from those U.S. EPA used in initially promulgating the numeric limits.

The regulations require all municipal wastewater treatment systems with a total flow in excess of 5 mgd that receive industrial wastes subject to national pretreatment standards to establish and implement industrial wastewater control programs. Municipal systems with a total flow of less than 5 mgd are also required to develop such programs if special problems warrant. To develop an approvable program pursuant to the regulatory requirements, these municipalities are required by 1983 to establish a publicly owned treatment works control agency within their municipal political structure; establish legal authority binding upon industrial users of the publicly owned treatment works control agency; develop procedures and authority to require industrial monitoring and reporting and to enter industrial grounds for the purpose of verifying compliance; establish a resource program to provide sufficient funding and personnel to implement the program; and establish procedures for public notification and participation in the locally-developed industrial wastewater control program. Federal financial assistance in the form of 75% construction grants is available to assist local agencies to develop mandated pretreatment programs.

## LOCAL PROGRAM DEVELOPMENT AND IMPLEMENTATION

Translating the complex statutory and regulatory requirements into viable local pretreatment capabilities within the stringent deadlines imposed is not going to prove financially, institutionally, technically, and legally easy, but it can be done. The larger, more sophisticated agencies recognized the need to protect water quality, plant operations, and sludge quality as well as to ensure worker safety and, accordingly, implemented industrial wastewater control programs prior to the development of a national pretreatment strategy. While the smaller facilities in large measure must develop this capability from scratch, these agencies are now required to fine-tune the new Federal requirements, particularly as they relate to the control of toxic pollutants.

## THE OBJECTIVE OF THE PRETREATMENT RESOURCE READER

The objective of the Pretreatment Resource Reader is to provide practical assistance to municipal wastewater treatment control agencies--both large and small--as they endeavor to develop approvable pretreatment programs pursuant to Federal requirements. As a means to accomplish this objective, the Reader relies extensively on the experiences of numerous local agencies in accomplishing various aspects of pretreatment program development, all of which are necessary for the development of an approvable program.

Chapter 2 of the Reader provides general information pertaining to conducting an industrial user survey, including identification and location of priority dischargers as well as data management and acquisition needs. The general survey approach is followed by specific approaches adopted by the Metropolitan St. Louis Sewer District, the Bergen County Utilities Authority, and the County Sanitation Districts of Los Angeles County to conduct an effective industrial waste survey.

Chapter 3 focuses on securing adequate legal authority to achieve program approval as well as effective implementation over the long-term. Relying on information provided by the Metropolitan St. Louis Sewer District and the Nashville Department of Water and Sewerage Services, this chapter addresses the importance of seeking legal advice at the program conception stage; necessary legal authority for achieving program approval; the need to review the legal background of the municipal agency and the state in which it is located; and, most important, how to maximize POTW control over industrial dischargers through ordinances, contracts, and joint powers agreements. The importance of enforcement is also discussed.

The local standard setting process, both with regard to prohibitory and categorical standards set by the Federal government, is addressed in Chapter 4. The experiences of the Hampton Roads Sanitary District and the Milwaukee Metropolitan Sewerage District are highlighted. In addition, the subject of removal credits is presented from the perspective of the Sanitation Districts of Los Angeles County.

Administrative and financial needs associated with program development and implementation are addressed in Chapter 5. The material for this chapter, provided by the Northeast Ohio Regional Sewer District, includes hypothetical cost estimates for various pretreatment program start-up elements; estimates total start-up and on-going costs for moderately-sized facilities; and discusses various options available to POTWs to recover program costs from users of the system.

Chapter 6 provides information on the important subject of designing a monitoring enforcement program. This chapter, prepared by the Metropolitan St. Louis Sewer District, presents numerous forms that POTWs will find extremely useful for purposes of notifying industrial users of pretreatment requirements; placing these users on compliance schedules; and achieving compliance with other mandated reporting requirements, including industrial user self-monitoring, progress and spill/slug discharge reports. The chapter also provides useful hints on POTW monitoring and other enforcement activities.

Chapter 7 rounds out the Reader's focus on specific aspects of pretreatment program development by addressing sludge disposal impacts. The chapter, prepared by the Chicago Metropolitan Sanitary District, highlights the types of pretreatment processes generating sludge; the types of sludges produced; and the impact of RCRA on the ultimate disposal of these sludges. The chapter also focuses on Chicago's sludge disposal manifest system which controls industrial sludges from location of origin to ultimate location of disposal. Brief case histories of industries in the Chicago area, showing pretreatment systems, sludges produced, and costs are also set forth.

Chapters 8-10 relate how three communities (Chattanooga, Tennessee; Rockford, Illinois; and San Francisco, California) are adjusting to the new program requirements. These communities were selected for the Reader with a view towards not only highlighting what they had or had not accomplished in terms of achieving the Federal program objectives, but also to pinpoint common, underlying program difficulties. The three systems are representative of treatment systems within the United States and differ in size, treatment process employed, the extent and types of industrial wasteloading experienced, and geographic location. They face distinct problems arising from varying local circumstances and have applied different and, at times, unique approaches to overcome them. At the same time, they illustrate the underlying difficulties that will have to be acknowledged and resolved to ensure the development and implementation of cost effective and environmentally sound programs.

# CHAPTER 2

## CONDUCTING AN EFFECTIVE INDUSTRIAL WASTE SURVEY

### INTRODUCTION

Conducting an effective industrial waste survey to comply with the requirements of the Federal Pretreatment Regulations will require considerable administrative effort and will vary in complexity from one locale to another depending upon the number of industries to be regulated and the number of regulated processes utilized by those industries. Local control authorities fine-tuning their programs have found that some industrial waste survey techniques in existence prior to the establishment of the Pretreatment Regulations can be expanded and successfully used to comply with pretreatment program survey requirements. Local control authorities establishing new industrial waste control programs are advised to learn from the experience of others and establish lines of communication with other local agencies to find equitable solutions to common problems. Establishing and conducting an effective industrial waste survey is not an impossible job provided sufficient funding is available, adequate manpower is developed, and efficient administrative procedures are utilized. The cohesiveness for the local pretreatment program will be the cooperation between the POTW, local governments, the general public, industry, and state and Federal agencies.

### A GENERAL SURVEY APPROACH

#### Identification and Location of Priority Dischargers

Section 403.8(f)(2)(i) of the General Pretreatment Regulations requires POTWs to identify and locate all industrial users which might be subject to the Pretreatment Program. The 1976 Consent Decree, which was a settlement of a suit brought against U.S. EPA by several environmental groups, stipulates that U.S. EPA must establish pretreatment standards for 65 toxic pollutants (listed in Appendix B of the General Pretreatment Regulations) for specific subcategories of 21 industrial groups (Appendix C of the General Pretreatment Regulations). U.S. EPA will establish categorical pretreatment standards based on the best available treatment technology economically achievable (BAT).

To fulfill this requirement the POTW, if it has not already done so, must conduct an Industrial Wastewater Survey of all industries discharging to the POTW. The initial task is establishing a comprehensive listing of all industries which might be subject to the categorical pretreatment standards. Reference to the aforementioned Appendix C and the Regulations indicates the nature of business of the affected industries and the associated Standard Industrial Classification (SIC) code for each subcategory. The SIC code is a classification determined by the U.S. Office of Management and Budget (USOMB). The current listing of SIC codes is presented in the "Standard Industrial Classification Manual," published by USOMB in 1972. Although a copy may be obtained at most local libraries, it is recommended that a POTW obtain its own copy.

The initial list of industries which might be subject to the categorical standards may be compiled from the following sources:

- Existing POTW files
- Existing Municipal files
- State Industrial Directories
- County Industrial Directories
- Water Company Consumption Records
- Tax Rolls
- Field Visits

Many POTWs have information on major contributing industries in their service area because of requirements of their NPDES discharge permits. At this time, however, this information may be restricted to those industries discharging more than 50,000 gallons per day or industries discharging pollutants which interfere with operation of the treatment works. This information should be utilized as the foundation for the industries survey. For regional POTWs, another source of potential industries is municipal files. State and County Industrial Directories are valuable aids because they include industry names, addresses, phone numbers, number of employees and, most important at this point, the nature of business of each industry and the associated SIC code. For purposes of the pretreatment program, this is important because it immediately identifies industries whose SIC code is listed in Appendix C.

The Industrial Directories, however, are not usually comprehensive. Water company consumption listings and tax rolls are additional sources of identifying industrial users. Field visits to known industries for purposes of interviews, sampling, or other reasons may also result in identification of industries. It should be noted that unless the POTW has very thorough existing records of industrial users, i.e., if they have an existing permit system for industrial users, establishing the initial listing of industries can be a time-consuming task.

Additional aids for this work are the phone book and a reverse address directory, whereby phone numbers can be determined by street address.

## Data Management

Wherever the POTW is large enough to warrant use of a computer for data management, it is recommended that the preliminary listing of industrial users be input to a data file. This provides an excellent method, via use of status code, to track progress of the industrial survey. For example, a status code could be set up to indicate if a questionnaire has been sent to a specific industry; if one has been received; and if there has been successful completion of data for each industry. It can also indicate if the industry has been visited or sampled. It should be noted that the Industrial Survey is an ongoing process that is not finished upon completion of the initial survey. Industries will constantly be starting up, leaving the area, and changing discharge volume and characteristics due to process changes or installation of pretreatment systems. The best approach to adequately handle the constant updating is through computer data management.

Utilization of a computer system allows the POTW to:

- Compile comprehensive listings of all industrial users
- Constantly update the data base to:
  - add information on new industries
  - delete industries leaving the system
  - record significant changes of existing industries
- Fulfill notification requirements quickly and easily (See Chapter 6)
- Calculate total industrial pollutant loadings
- Fulfill reporting requirements (See Chapter 6)
- Monitor self-monitoring reports (See Chapter 6)
- Respond to special needs as they arise.

## Data Acquisition

Upon determination that an Industrial User is subject to categorical standards, it is the POTW's responsibility to determine the nature and character of pollutants discharged by the user. Although the basic character can be estimated from the SIC code (i.e., an electroplater would most likely discharge heavy metals, an organic chemicals manufacturer may discharge certain toxic organics), the POTW must have more specific information available.

Any Industrial Wastewater Questionnaire should be developed by the POTW to determine necessary information on discharge of each industrial user tributary to the treatment works. The questionnaire should be designed to provide as much information as possible on each industrial user. An explanatory cover letter should be attached to explain to the industrial user the intent of the survey. A sample questionnaire, filled out by the POTW, is also beneficial.

Information requested on the questionnaire should include, at a minimum, the following:

- Name and address of industry
- Responsible company official
- Nature of business and SIC code
- Products manufactured
- Raw materials used
- Number of employees; number of shifts per day; days per week; days per year
- Water consumption sources and quantity
- Types and amounts of discharge as:
  - process
  - cooling
  - sanitary
- Map of discharge points
- Description of current pretreatment, if any.

Experience by various POTWs indicates that, of those questionnaires returned, many will be incomplete. A fair amount of questionnaires can be completed over the phone, but it should be anticipated that visits to many industrial users will be necessary.

POTW personnel dealing with industry should approach this work with a spirit of cooperation. Although the POTW must fulfill its responsibilities of the Pretreatment Program, it can enhance the success of this program by encouraging productive two-way communication between the POTW and industry.

## THE ST. LOUIS SURVEY EXPERIENCE

### Background Information

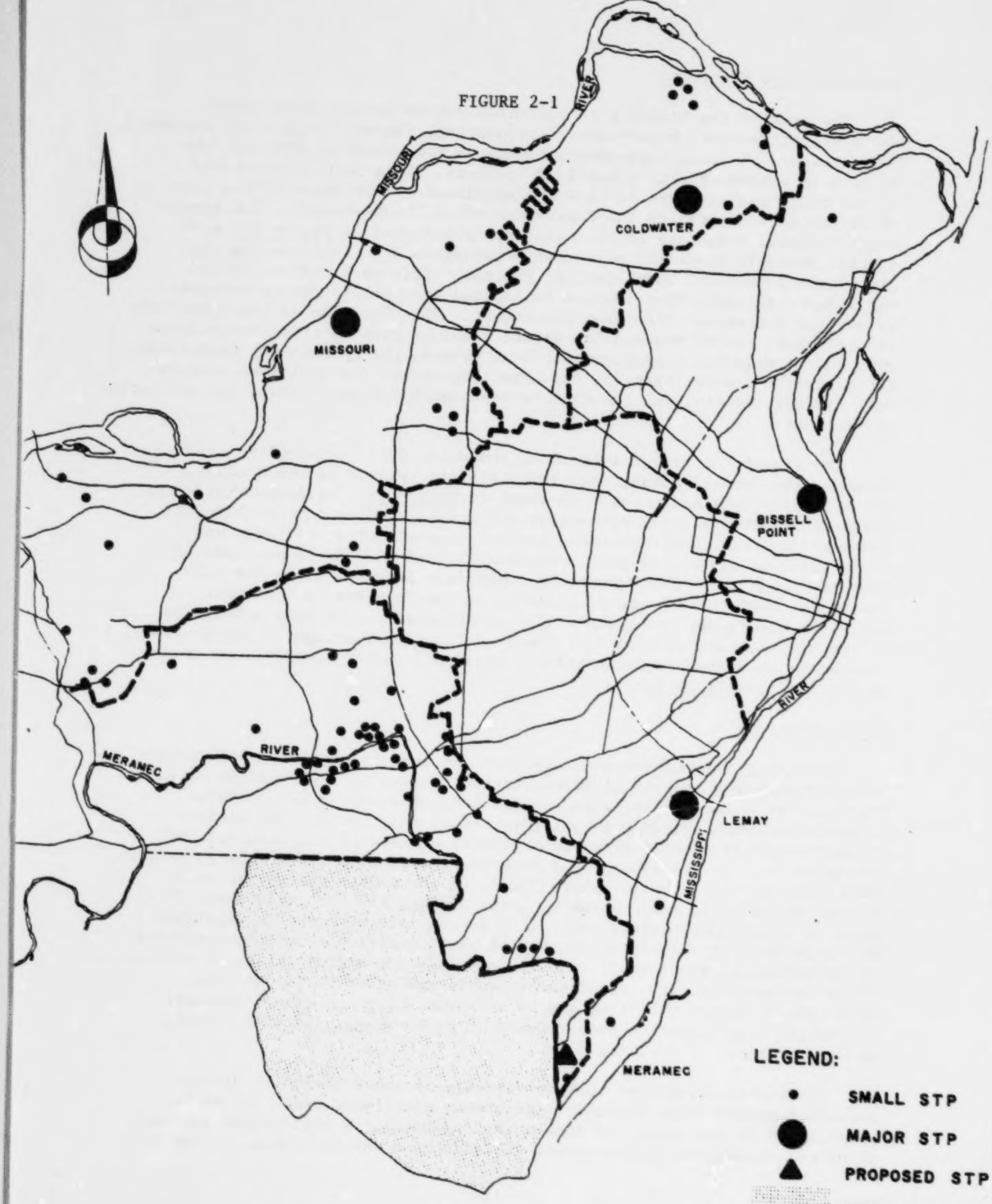
The Metropolitan St. Louis Sewer District (MSD) developed an industrial waste control program in June 1972 which meets, with slight modification, many of the industrial survey and administrative requirements identified in the General Pretreatment Regulations. To successfully understand and assess the value of MSD's industrial waste survey methodology and relate the impact of these Regulations to other industrial waste control programs, certain background information on MSD is needed.

The District is a special entity chartered by the State of Missouri for the purpose of collecting and treating wastewater discharges within its boundaries. The land area encompassed by the District is 482 square miles and includes the City of St. Louis and most of St. Louis County. A population of 1.6 million is served by the District, and there are presently four major sewage treatment plants and over 80 smaller package treatment plants and lagoons. The volume of wastewater treated daily is about 320 million gallons. There are approximately 27,000 commercial and industrial accounts which are billed based on metered water usage. Three hundred and fifteen (315) of these discharge more than 50,000 gallons of wastewater per day, and about 650 establishments discharge lesser volumes of wastewater but are considered to be significant contributors based on type and quantity of pollutants discharged. Recent estimates indicate that about 3,000 industries would be classified in the 21 industrial subcategories and directly affected by the list of 65 priority pollutants published in the regulations.

The MSD Charter approved by the voters of the District in 1954 grants the power to adopt ordinances for operation of the District. Presently, the District is responsible for the operation and maintenance of all combined sewers in the City of St. Louis, the sanitary sewer systems in the more than 90 individual municipalities located in St. Louis County, and several storm sewer systems in the older sections of St. Louis County. The responsibility for collection system maintenance is concurrent with the District's wastewater treatment obligations.

The land area encompassed by the District and the location of the several treatment systems is shown in Figure 2-1. The shaded area at the bottom portion of the figure represents an area in Jefferson County, Missouri, in the vicinity of the City of Arnold. This area will be served by the District under contract when a planned regional sewage treatment facility, the Meramec Sewage Treatment Plant, is constructed at the confluence of the Meramec and Mississippi Rivers.

FIGURE 2-1


MISSOURI
RIVER
COLDWATER
MISSOURI
BISSELL POINT
LEMAY
MISSISSIPPI
RIVER
MERAMEC
RIVER
MERAMEC
LEGEND:
● SMALL STP
● MAJOR STP
▲ PROPOSED STP
▨ ARNOLD AREA

MSD TREATMENT AREAS AND PLANT LOCATIONS

## Organizational Structure

The work of the District is conducted within several departments: Wastewater Treatment, Maintenance, Engineering, Finance, Legal, and Personnel. The directors of these departments report to the Executive Director who in turn is responsible to a Board of Trustees. This Board is composed of six businessmen, three of whom are appointed by the Mayor of the City of St. Louis and three by the Supervisor of St. Louis County. The general organizational structure of the District is depicted in Figure 2-2 with special emphasis given the work unit responsible for administering the District's Industrial Waste Control Program. This work unit is titled the Industrial Waste Division and is located for administrative purposes within the Wastewater Treatment Department. This Division is the regulatory and technical arm of MSD and has direct lines of communication established with the Engineering Department for plan review, the Maintenance Department for pollution source location, the Legal Department for ordinance development and enforcement, and the Finance Department for user charge and surcharge collections.

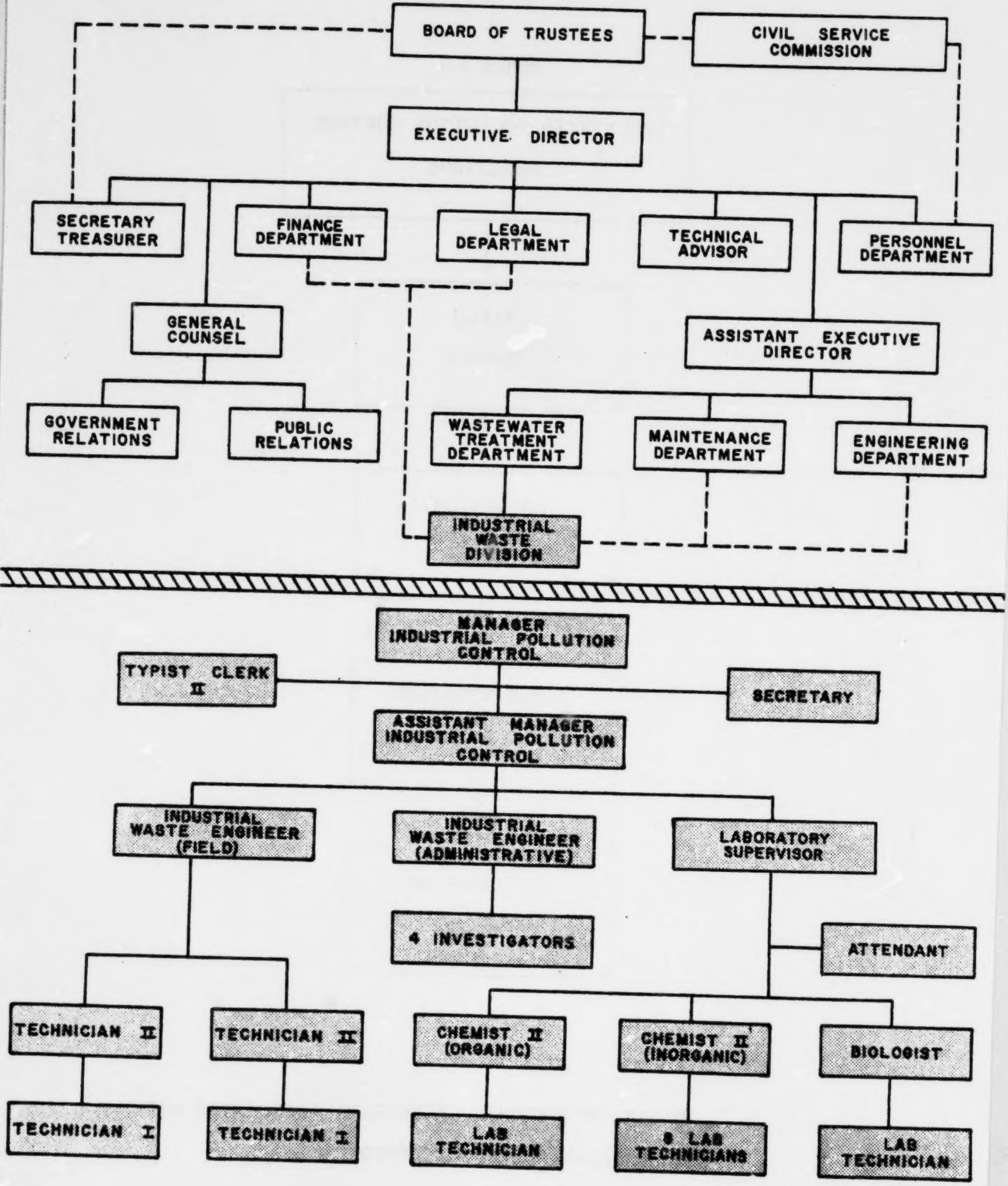
The Industrial Waste Division is composed of 27 technically oriented persons with overall operational responsibility vested in the Manager, Industrial Pollution Control. As shown in Figure 2-2, an Industrial Waste Engineer supervises field operations and is assisted by four Technicians. Another Industrial Waste Engineer supervises administrative tasks and investigations associated with ordinance violations. He is assisted by four Investigators. The Laboratory Supervisor is responsible for all analytical requirements and is assisted by two Chemists, a Biologist, and eight Laboratory Technicians plus an Attendant. The work activities of the Division are divided into the four functional groups of field survey, laboratory analysis, administrative processing, and engineering management as depicted in Figure 2-3.

## Legal Authority

Obtaining information and data from industry to enable administration of the District's Industrial Waste Control Program is regulated by ordinance. The District's industrial waste control ordinance, No. 2289, includes a provision which requires industry to report the quantity and quality of wastewater discharged from manufacturing or service activities. The provision reads as follows: "All persons or companies who discharge sewage, industrial waste, water or other liquid, to the sewage system, or to a stream, or to both, and consume at least 500 Ccf (50,000 cubic feet) of water in a six month period shall fill in and file with the Metropolitan St. Louis Sewer District, an Industrial Waste Questionnaire form furnished by the District, which shall contain information concerning type of manufacturing or service activity, location of sewers and other pertinent data, inclusive of quantity of flow and an analysis, based on stated standard industrial classification requirements of such sewage, industrial waste, water, or liquid so discharged."

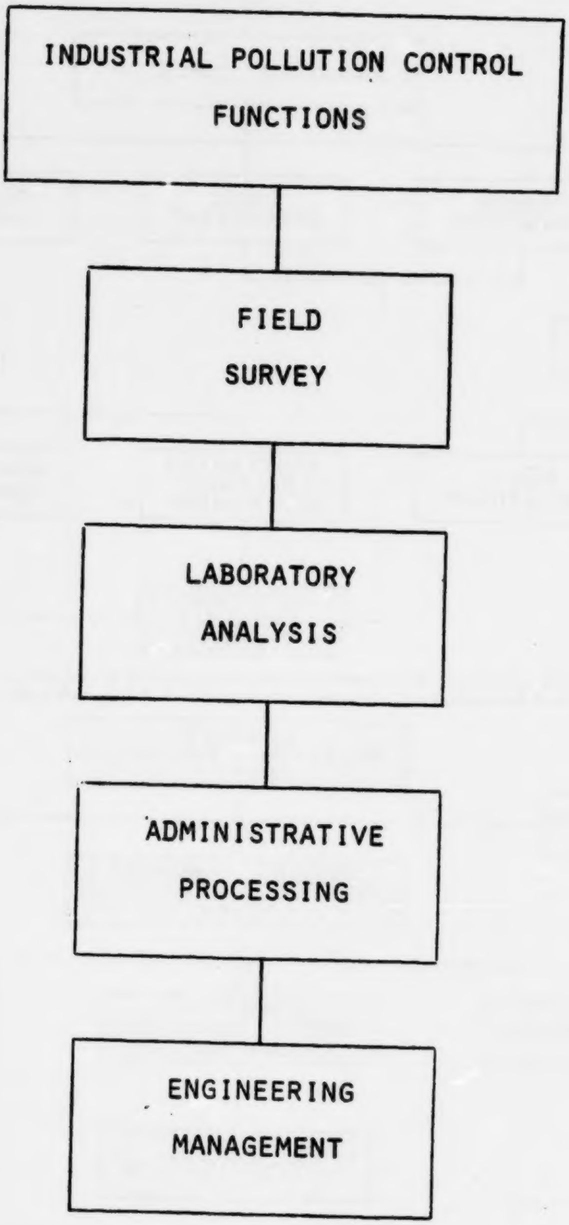
The District realized that to effectively and efficiently utilize available manpower and financial resources, some lower limit had to be established on the number of industries regulated. A statistical analysis of water consumption versus number of industries was performed. A decision

FIGURE 2-2


BOARD OF TRUSTEES
CIVIL SERVICE COMMISSION
EXECUTIVE DIRECTOR
SECRETARY TREASURER
FINANCE DEPARTMENT
LEGAL DEPARTMENT
TECHNICAL ADVISOR
PERSONNEL DEPARTMENT
GENERAL COUNSEL
ASSISTANT EXECUTIVE DIRECTOR
GOVERNMENT RELATIONS
PUBLIC RELATIONS
WASTEWATER TREATMENT DEPARTMENT
MAINTENANCE DEPARTMENT
ENGINEERING DEPARTMENT
INDUSTRIAL WASTE DIVISION
MANAGER INDUSTRIAL POLLUTION CONTROL
TYPIST CLERK II
SECRETARY
ASSISTANT MANAGER INDUSTRIAL POLLUTION CONTROL
INDUSTRIAL WASTE ENGINEER (FIELD)
INDUSTRIAL WASTE ENGINEER (ADMINISTRATIVE)
LABORATORY SUPERVISOR
4 INVESTIGATORS
ATTENDANT
TECHNICIAN II
TECHNICIAN II
CHEMIST II (ORGANIC)
CHEMIST II (INORGANIC)
BIOLOGIST
TECHNICIAN I
TECHNICIAN I
LAB TECHNICIAN
8 LAB TECHNICIANS
LAB TECHNICIAN

MSD DEPARTMENTAL STRUCTURE AND INDUSTRIAL WASTE DIVISION ORGANIZATION

FIGURE 2-3


INDUSTRIAL POLLUTION CONTROL FUNCTIONS
FIELD SURVEY
LABORATORY ANALYSIS
ADMINISTRATIVE PROCESSING
ENGINEERING MANAGEMENT

MAJOR OPERATIONAL CATEGORIES ASSOCIATED WITH INDUSTRIAL POLLUTION CONTROL was made based on the results of the analysis to only regulate those commercial and industrial establishments discharging more than 2,000 gallons per day of wastewater to the sewage system. The Pretreatment regulations and associated categorical Pretreatment Standards do not, however, recognize a water consumption or wastewater discharge volume cutoff. Based on Consent Decree criteria, at least 95% of all industries within a regulated category must provide pretreatment program information.

Prior to submitting this industry reporting provision to the Board of Trustees for approval, meetings were held to discuss the new requirement and associated administrative procedures with industrial representatives from all affected industries. Invitations were extended by direct mailing to enable industrial officials to attend and ask questions and evaluate the acceptability of the program and impact on their businesses. It was through such meetings that industry was kept informed and given an opportunity to participate in program development.

## Location of Dischargers

Prior to holding public meetings for affected industries, those industries had to be located, identified, and enumerated. MSD's present system of locating industrial dischargers has relied heavily on various water companies which provide MSD with connection and consumption information. They are the City of St. Louis Water Department, the St. Louis County Water Company, and the Water Departments of Florissant, Kirkwood, and Webster Groves. Since the District's commercial and industrial user charge system was well developed prior to establishing the District's Industrial Waste Control Program, MSD billing lists and accounts receivable documents have also been used extensively. Other supplemental sources which have proven useful both to MSD's Billing Department and to industrial waste control efforts are the business news section of local newspapers and permit applications for construction of new industrial facilities.

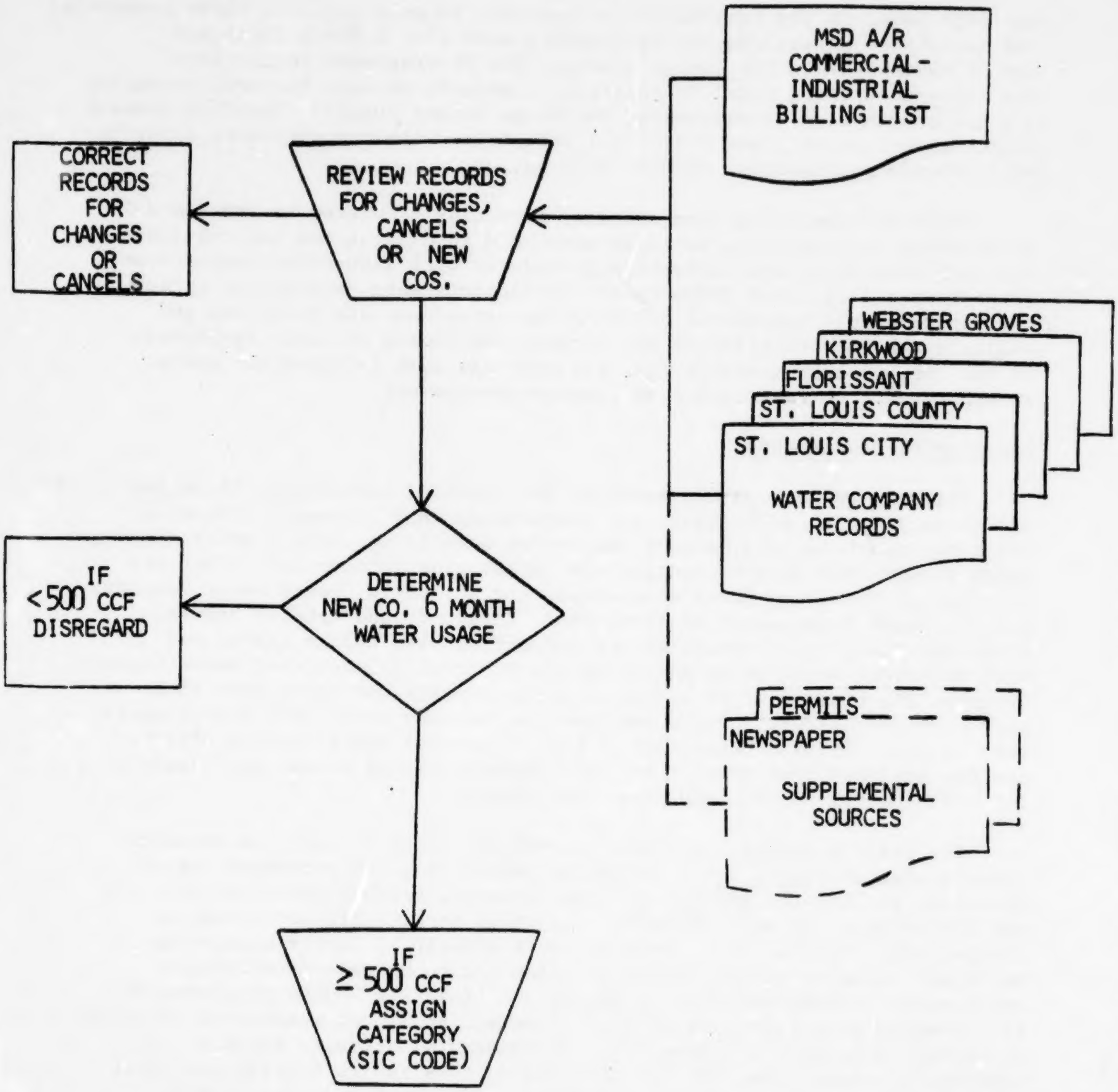
The basic procedures utilized by MSD to locate industry is depicted symbolically in Figure 2-4. Industrial Waste Division personnel review available records for address and name changes, account cancellations, and the addition of new companies. Existing records are corrected for changes and cancellations. Because MSD's industrial survey procedures are based on water usage, a determination had to be made concerning a new company's water consumption during the first six months of operation. If a company uses less than 500 Ccf of water, it is not considered necessary to review that company's industrial or commercial activity further. If, however, a company uses 500 Ccf of water or more in its initial six month operating period, the company is scheduled for further identification processing, i.e., SIC code assignment.

MSD's billing of industrial accounts is presently on a six month cycle with a portion of the accounts billed each month. Each monthly billing must be reviewed to determine if a company previously below 500 Ccf water usage has had increased activity and requires SIC identification.

## Identifying and Categorizing Industries

Once determined to require further identification based on water usage, a company is contacted directly by phone to ascertain its manufacturing

FIGURE 2-4


MSD A/R COMMERCIAL-INDUSTRIAL BILLING LIST
REVIEW RECORDS FOR CHANGES, CANCELS OR NEW COS.
CORRECT RECORDS FOR CHANGES OR CANCELS
WEBSTER GROVES
KIRKWOOD
FLORISSANT
ST. LOUIS COUNTY
ST. LOUIS CITY
WATER COMPANY RECORDS
DETERMINE NEW CO. 6 MONTH WATER USAGE
IF <500 CCF DISREGARD
PERMITS
NEWSPAPER
SUPPLEMENTAL SOURCES
IF ≥ 500 CCF ASSIGN CATEGORY (SIC CODE)

PROCEDURE UTILIZED BY MSD TO LOCATE INDUSTRY or service activity. At the beginning of MSD's present Industrial Waste Control Program, all establishments using more than 500 Ccf of water were contacted in this manner. Since MSD's billing lists and information from the water companies contain only street addresses, a "Street Address Directory" (Reverse Directory) from Southwestern Bell Telephone Company was utilized to obtain the telephone numbers at listed premises. The person contacted at the premise was asked the type of business conducted at that location. This personal contact information was then utilized along with manufacturing and service activity classification data contained in the "Standard Industrial Classification Manual," published by the Federal Office of Management and Budget to select and assign an appropriate four-digit SIC code.

Another publication MSD found useful for identifying and categorizing industries is the "Missouri Directory of Manufacturing and Mining," published by Informative Data Company (IDC) of St. Louis, Missouri. Listings in this publication show company name, address, telephone, person to contact, number of employees, export codes, and description of products and services. Similar information is available for 21 other states from IDC.

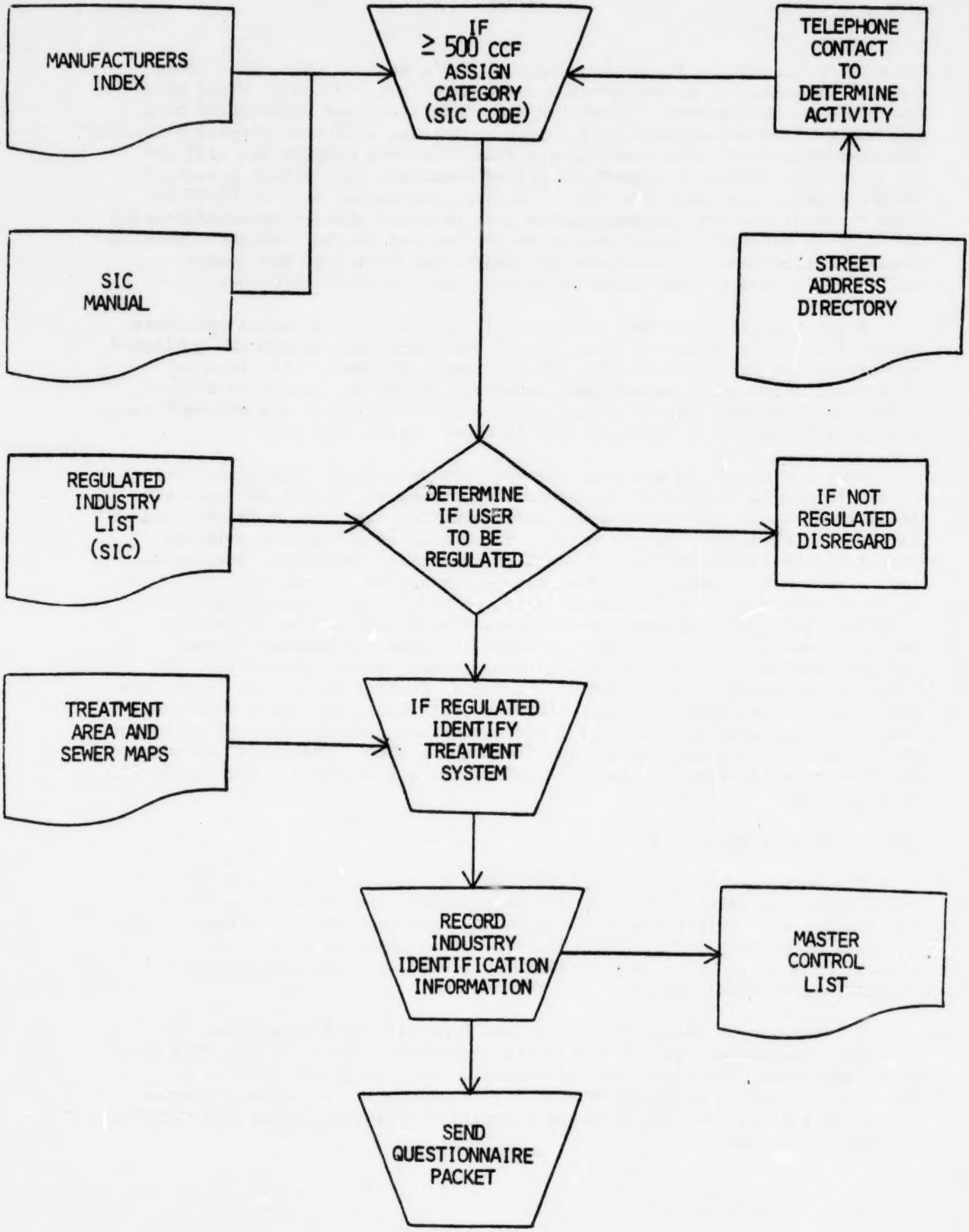
Once a SIC code is assigned to a particular account, MSD gives further consideration to wastewater regulation requirements. A list of regulated industries by SIC code is used for this determination. All manufacturing industries (Division D in the manual) are regulated along with selected facilities in Divisions E and I, such as commercial laundries, hospitals, and motor freight companies. When the determination is made that a company is to be regulated, the treatment system to which that company discharges is identified using treatment area maps and base maps of the collection sewers. Identification information which includes the company's name, premise address, mailing address, account number, water consumption, SIC code, and treatment area is added to a Master Control List. The industries appearing on this Master Control List are sent industrial waste questionnaires to determine in more detail the nature and concentration of pollutants discharged to the public sewers and treatment system. The steps and resources utilized to categorize and identify industries are depicted symbolically in Figure 2-5.

## Industrial Self-Reporting

The Metropolitan St. Louis Sewer District has utilized the questionnaire technique since 1972 to obtain information from industry on volume and character of pollutants discharged. The response and percentage return has been excellent since failure to return the completed questionnaire within the allotted time is a violation of local ordinance punishable by fine and/or imprisonment.

To comply with the provisions of the Pretreatment Regulations, the District intends to continue soliciting information utilizing the questionnaire approach. The questionnaire utilized previously will have to be modified to require information relative to number of regulated processes within an industry and the type and quantity of priority pollutants entering the sewage system.

FIGURE 2-5


MANUFACTURERS INDEX
SIC MANUAL
IF ≥ 500 CCF ASSIGN CATEGORY (SIC CODE)
TELEPHONE CONTACT TO DETERMINE ACTIVITY
STREET ADDRESS DIRECTORY
REGULATED INDUSTRY LIST (SIC)
DETERMINE IF USER TO BE REGULATED
IF NOT REGULATED DISREGARD
TREATMENT AREA AND SEWER MAPS
IF REGULATED IDENTIFY TREATMENT SYSTEM
RECORD INDUSTRY IDENTIFICATION INFORMATION
MASTER CONTROL LIST
SEND QUESTIONNAIRE PACKET

PROCEDURE USED BY MSD TO CATEGORIZE AND IDENTIFY INDUSTRIES

## The Questionnaire Format

A probable questionnaire format which will be sent to the industries in the St. Louis area is included as Figure 2-6 through Figure 2-9. The questionnaire will be accompanied by an instruction booklet giving guidance on how to obtain the information requested and a letter of transmittal explaining industry's reporting obligation. The pretreatment questionnaire will differ with the questionnaire submitted to industry in previous years. Major changes will deal with priority pollutant data and the confidentiality of the information provided.

All information submitted by industry in previous questionnaires was considered confidential. Public participation requirements now make it necessary for all information and data which identifies the nature and frequency of discharge from an industry to be made available to the public upon request without restriction. At the top of the first page of the questionnaire (see Figure 2-6), a note to the signing official is included to alert the company to this condition.

The questionnaire is subdivided into six (6) sections. The first section (Section A) requests general information such as the company's name, mailing address, premise address, the signing official's name and title, and the name and title of the person to contact concerning information provided on the questionnaire. Also included in Section A is a credibility statement to be certified by the signing official.

Product or service information is requested in Section B. A description of the manufacturing or service activity is required along with the principal raw materials used, any process catalyst used, and the principal products produced or services rendered. Normally, a company considers one major manufacturing or service function as its primary activity. In Item 5 of Section B, MSD requests the company to provide Standard Industrial Classification Codes (SIC) for all identifiable processes. This requirement is necessitated by U.S. EPA regulation of selected processes. For example, a company can have several processes within one facility which are regulated by specific categorical standards.

Section C of the questionnaire relates to plant operational characteristics. General information is requested on character of processes, whether batch or continuous, the susceptibility of processes to seasonal variation, the number of shifts and work days per week, and the number of employees per shift. A description of any raw water treatment process, wastewater treatment process, or water recycling or material reclaiming processes utilized is also requested. Emphasis is continually being placed on control of spills. For this reason, Item 7 of Section C is included to alert the company that they should have a Spill Prevention Control and Countermeasure Plan (SPCCP). Thought given to the development of such a plan could save the company and the POTW considerable time and expense mitigating the effects of material spills.

The second page of the questionnaire is presented in Figure 2-7 and contains Sections D and E. Section D is devoted to comparing water consumption with water losses. Information relative to the raw water source and usage during the past twelve months is requested. The volume of water used for specific purposes such as cooling, boiler feed, process, and sanitary

FIGURE 2-6

## METROPOLITAN ST. LOUIS SEWER DISTRICT

### INDUSTRIAL USER PRETREATMENT QUESTIONNAIRE

Note to Signing Official: In accordance with Title 40 of the Code of Federal Regulations Part 403 Section 403.14, information and data provided in this questionnaire which identifies the nature and frequency of discharge shall be available to the public without restriction. Requests for confidential treatment of information shall be governed by procedures specified in 40 CFR Part 2.

SECTION A. GENERAL INFORMATION

1. Company name ____________________
2. Mailing address ____________________ Zip Code ________
3. Premise address ____________________ Zip Code ________
4. Name and title of signing official: ____________, ____________
5. Person to contact concerning information provided herein:
   Name & title: ____________, ____________ Tele.No. (  ) ________

I have personally examined and am familiar with the information submitted in this document and attachments. Based upon my inquiry of those individuals immediately responsible for obtaining the information reported herein, I believe that the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and/or imprisonment.

____________ Date

____________ Signature of Official (Seal if applicable)

SECTION B. PRODUCT OR SERVICE INFORMATION

1. Brief narrative description of manufacturing or service activity at premise address: ____________________
2. Principal Raw Materials Used: ____________________
3. Process Catalysts Used: ____________________
4. Principal Products or Service: ____________________
5. Standard Industrial Classification Code(s) (SIC) For All Processes: ____________________

SECTION C. PLANT OPERATIONAL CHARACTERISTICS

1. Are major processes batch or continuous? ____________
   Average number of batches per 24 hr. day: ____________
2. Are your processes subject to seasonal variation? ____________
   If yes, explain indicating month(s) of peak operation and products: ____________
3. Shift Information: a. number of shifts per work day ________
   b. number of work days per week ________
   c. average number of Employees per shift:
      1st. ________
      2nd. ________
      3rd. ________
      Total ________
   d. shift start times:
      1st. ________
      2nd. ________
      3rd. ________
4. Describe any wastewater treatment equipment or processes in use: ____________________
5. Describe any raw water treatment processes utilized: ____________________
6. Describe any water recycling or material reclaiming processes utilized: ____________________
7. Is a Spill Prevention Control and Countermeasure Plan prepared for the facility?
   YES ☐ NO ☐

FIRST PAGE OF INDUSTRIAL USER PRETREATMENT QUESTIONNAIRE

FIGURE 2-7

## SECTION D. WATER CONSUMPTION AND LOSS

1. Raw water source (city,county,other explain): ______________________________

2. List past twelve months water usage from water bills:
   a. 1st 6 month period, 19 __ ______________ Ccf
   b. 2nd 6 month period, 19 __ ______________ Ccf
   c. Volume from other sources: ________ gallons per day.

3. List water consumption within the plant:

| | Type | Estimated Average Volume (gallons per day) |
|---|---|---|
| a. | cooling water | |
| b. | boiler feed | |
| c. | process | |
| d. | sanitary system | _____ gals. _____ employees/day |
| e. | other ( ) | |

4. List average volume of discharge or water losses to:

| | Outlet | Estimated Average Discharge (gallons per day) |
|---|---|---|
| a. | municipal sewer | |
| b. | natural | |
| c. | waste haulers | |
| d. | evaporation | |
| e. | contained in product | |

5. List average water usage for SIC Processes itemized in Section B-5 above:

| SIC No. | Brief Process Description | Average Water Consumption(GPD) |
|---|---|---|
| | | |
| | | |
| | | |

## SECTION E. SEWER CONNECTION AND DISCHARGE INFORMATION

1. List plant sewer outlets, size and flow: (assign sequential reference number to each sewer starting with No. 1).

| Reference No. | Sewer Size (inches) | Descriptive location of sewer connection or discharge point | Avg. flow (GPD) |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

2. Attach a scaled drawing of the industrial complex showing location of sewer referenced in E-1 above and location of the SIC process described in Section D-5. Show location of possible sampling points for sewers and SIC process effluents. For reference and field orientation buildings, streets, alleys, and other pertinent physical structures should be included.

SECOND PAGE OF INDUSTRIAL USER PRETREATMENT QUESTIONNAIRE purposes is required. Wastewater discharge volume is also requested to determine the quantity of wastewaters discharged directly to the municipal sewer, to a natural watercourse, hauled offsite by a waste hauler, evaporated, or shipped out in product. In Item 5 of Section D, water usage information for SIC processes itemized under product or service information (Section B, Item 5) is requested. Such information is necessitated by the regulation of specified processes. Sampling frequency for the regulated processes will be based on water usage as will pollutant analyses. In addition to the SIC number, a brief description of the process is to be supplied. Such descriptions can be used to ascertain the applicability of monitoring and reporting requirements for processes regulated by U.S. EPA.

Section E concerns sewer connection and discharge information. The location of sewer connections to the public sewer system, the size of these sewers, the volume of wastewater flow in each sewer, and an overall site plan showing sewer locations with respect to plant buildings and city streets is required. Because of the need to sample regulated process effluents, the location of the SIC processes described previously in Section D, Item 5, must also be shown. Possible sampling points for these SIC process effluents should also be located. Such information will aid the collection of data to verify compliance with technology based effluent standards.

The last two pages of the questionnaire, Figures 2-8 and 2-9, are designed to obtain information concerning the magnitude of priority pollutant discharges from a company. Section F, Item 1, lists 130 priority pollutants. Ammonia has been added because it was proposed as an addition in the January 3, 1980, Federal Register. Recent controversy, however, has prevented its inclusion. It is realized that some difficulty may be experienced in obtaining such specific chemical information, particularly if proprietary compounds such as cleaning compounds, photographic developer solutions, and other such products are used. Manufacturers and/or suppliers may have to assist companies who use their products in providing priority pollutant information. Item 1 is dedicated to determining the presence or absence of a specific priority pollutant used in a company's manufacturing or service activity or the generation of a priority pollutant as a byproduct.

It has long been a problem in dealing with organic compounds to describe a particular compound using one universal name. Many organic compounds are known by two or more names, i.e., hexachloroethane and perchloroethane. National attention is being given to this identification problem and, hopefully, some means will be devised to define a specific compound using one universally accepted name or number. Several of the 129 priority pollutants have dual names. MSD has attempted to help in this identification by supplying a list of synonymous names. For the compounds that are identified with an asterisk, a synonymous name will be found on a list supplied in the instruction packet. A copy of this synonym list is included as Figure 2-10.

Once the priority pollutants have been identified as either absent or present in a manufacturing or service activity, information concerning the annual usage of those listed as present is requested in Item 2 of Section F. Data relative to pounds of chemical used annually are required. An estimate of the quantity of chemical, in pounds per year, lost to the

FIGURE 2-8

## SECTION F. PRIORITY POLLUTANT INFORMATION

1. Please indicate by placing an "X" in the appropriate box by each listed chemical whether it is Suspected to be Absent, Known to be Absent, Suspected to be Present, or Known to be Present in your manufacturing or service activity or generated as a byproduct. Some compounds are known by other names. Please refer to the instruction packet for those compounds which have an asterisk (*).

| ITEM NO. | CHEMICAL COMPOUND | SUSPECTED ABSENT | KNOWN ABSENT | SUSPECTED PRESENT | KNOWN PRESENT |
|---|---|---|---|---|---|
| 1. | ammonia | | | | |
| 2. | asbestos (fibrous) | | | | |
| 3. | cyanide (total) | | | | |
| | | | | | |
| 4. | antimony (total) | | | | |
| 5. | arsenic (total) | | | | |
| 6. | beryllium (total) | | | | |
| 7. | cadmium (total) | | | | |
| 8. | chromium (total) | | | | |
| 9. | copper (total) | | | | |
| 10. | lead (total) | | | | |
| 11. | mercury (total) | | | | |
| 12. | nickel (total) | | | | |
| 13. | selenium (total) | | | | |
| 14. | silver (total) | | | | |
| 15. | thallium (total) | | | | |
| 16. | zinc (total) | | | | |
| | | | | | |
| 17. | acenaphthene | | | | |
| 18. | acenaphthylene | | | | |
| 19. | acrolein | | | | |
| 20. | acrylonitrile | | | | |
| 21. | aldrin | | | | |
| 22. | anthracene | | | | |
| 23. | benzene | | | | |
| 24. | benzidine | | | | |
| 25. | benzo(a)anthracene* | | | | |
| 26. | benzo(a)pyrene* | | | | |
| 27. | benzo(b)fluoranthene | | | | |
| 28. | benzo(g,h,i)perylene* | | | | |
| 29. | benzo(k)fluoranthene* | | | | |
| 30. | a-BHC (alpha) | | | | |
| 31. | b-BHC (beta) | | | | |
| 32. | d-BHC (delta) | | | | |
| 33. | g-BHC* (gamma) | | | | |
| 34. | bis(2-chloroethyl)ether* | | | | |
| 35. | bis(2-chloroethoxy)methane* | | | | |
| 36. | bis(2-chloroisopropyl)ether* | | | | |
| 37. | bis(chloromethyl)ether* | | | | |
| 38. | bis(2-ethylhexyl)phthalate* | | | | |
| 39. | bromodichloromethane* | | | | |
| 40. | bromoform* | | | | |
| 41. | bromomethane* | | | | |
| 42. | 4-bromophenylphenyl ether | | | | |
| 43. | butylbenzyl phthalate | | | | |
| 44. | carbon tetrachloride* | | | | |
| 45. | chlordane | | | | |
| 46. | 4-chloro-3-methylphenol* | | | | |
| 47. | chlorobenzene | | | | |
| 48. | chloroethane* | | | | |
| 49. | 2-chloroethylvinyl ether | | | | |
| 50. | chloroform* | | | | |
| 51. | chloromethane* | | | | |
| 52. | 2-chloronaphthalene | | | | |
| 53. | 2-chlorophenol* | | | | |
| 54. | 4-chlorophenylphenyl ether | | | | |
| 55. | chrysene* | | | | |
| 56. | 4,4'-DDD* | | | | |
| 57. | 4,4'-DDE* | | | | |
| 58. | 4,4'-DDT* | | | | |
| 59. | dibenzo(a,h)anthracene* | | | | |
| 60. | dibromochloromethane* | | | | |
| 61. | 1,2-dichlorobenzene* | | | | |
| 62. | 1,3-dichlorobenzene* | | | | |
| 63. | 1,4-dichlorobenzene* | | | | |
| 64. | 3,3'-dichlorobenzidine | | | | |
| 65. | dichlorodifluoromethane* | | | | |
| 66. | 1,1-dichloroethane* | | | | |
| 67. | 1,2-dichloroethane* | | | | |
| 68. | 1,1-dichloroethene* | | | | |
| 69. | trans-1,2-dichloroethene* | | | | |
| 70. | 2,4-dichlorophenol | | | | |
| 71. | 1,2-dichloropropane* | | | | |
| 72. | (cis & trans)1,3-dichloropropene* | | | | |
| 73. | dieldrin | | | | |
| 74. | diethyl phthalate* | | | | |
| 75. | 2,4-dimethylphenol* | | | | |
| 76. | dimethyl phthalate | | | | |
| 77. | di-n-butyl phthalate | | | | |
| 78. | di-n-octyl phthalate* | | | | |
| 79. | 4,6-dinitro-2-methylphenol* | | | | |
| 80. | 2,4-dinitrophenol | | | | |
| 81. | 2,4-dinitrotoluene | | | | |
| 82. | 2,6-dinitrotoluene | | | | |
| 83. | 1,2-diphenylhydrazine* | | | | |
| 84. | endosulfan I* | | | | |
| 85. | endosulfan II* | | | | |
| 86. | endosulfan sulfate | | | | |
| 87. | endrin | | | | |
| 88. | endrin aldehyde | | | | |
| 89. | ethylbenzene | | | | |
| 90. | fluoranthene | | | | |
| 91. | fluorene* | | | | |
| 92. | heptachlor | | | | |
| 93. | heptachlor epoxide | | | | |

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FIGURE 2-9

SECTION F. PRIORITY POLLUTANT INFORMATION (CON'T)

| ITEM NO. | CHEMICAL COMPOUND | SUSPECTED ABSENT | KNOWN ABSENT | SUSPECTED PRESENT | KNOWN PRESENT | ITEM NO. | CHEMICAL COMPOUND | SUSPECTED ABSENT | KNOWN ABSENT | SUSPECTED PRESENT | KNOWN PRESENT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 94. | hexachlorobenzene* | | | | | 112. | PCB-1248* | | | | |
| 95. | hexachlorobutadiene | | | | | 113. | PCB-1254* | | | | |
| 96. | hexachlorocyclopenta- | | | | | 114. | PCB-1260* | | | | |
| | diene* | | | | | 115. | pentachlorophenol | | | | |
| 97. | hexachloroethane* | | | | | 116. | phenanthrene | | | | |
| 98. | indeno(1,2,3-cd)pyrene* | | | | | 117. | phenol | | | | |
| 99. | isophorone* | | | | | 118. | pyrene | | | | |
| 100. | methylene chloride* | | | | | 119. | 2,3,7,8-tetrachlorodi- | | | | |
| 101. | naphthalene | | | | | | benzo-p-dioxin* | | | | |
| 102. | nitrobenzene | | | | | 120. | 1,1,2,2-tetrachloroethane* | | | | |
| 103. | 2-nitrophenol* | | | | | 121. | tetrachloroethene* | | | | |
| 104. | 4-nitrophenol* | | | | | 122. | toluene* | | | | |
| 105. | n-nitrosodimethylamine* | | | | | 123. | toxaphene | | | | |
| 106. | n-nitrosodipropylamine* | | | | | 124. | 1,2,4-trichlorobenzene | | | | |
| 107. | n-nitrosodiphenylamine* | | | | | 125. | 1,1,1-trichloroethane* | | | | |
| 108. | PCB-1016* | | | | | 126. | 1,1,2-trichloroethane* | | | | |
| 109. | PCB-1221* | | | | | 127. | trichloroethene* | | | | |
| 110. | PCB-1232* | | | | | 128. | trichlorofluoromethane* | | | | |
| 111. | PCB-1242* | | | | | 129. | 2,4,6-trichlorophenol | | | | |
| | | | | | | 130. | vinyl chloride* | | | | |

2. For chemical compounds in F-1 above which are indicated to be "Known Present," please list and provide the following data for each: (attach additional sheets if needed)

| ITEM NO. | CHEMICAL COMPOUND | ANNUAL USAGE (LBS) | ESTIMATED LOSS TO SEWER LBS./YR. | ITEM NO. | CHEMICAL COMPOUND | ANNUAL USAGE (LBS) | ESTIMATED LOSS TO SEWER LBS./YR. |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
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FIGURE 2-10

## APPENDIX A - PRIORITY POLLUTANT SYNONYM LISTING

| CHEMICAL COMPOUND | SYNONYM |
|---|---|
| benzo(a)anthracene | 1,2-benzanthracene<br>2,3-benzphenanthrene |
| benzo(a)pyrene | 3,4-benzopyrene |
| benzo(g,h,i)perylene | 1,12-benzoperylene |
| benzo(k)fluoranthene | 11,12-benzofluoranthene |
| g-BHC | lindane |
| bis(2-chloroethyl)ether | 2,2'-dichloroethyl ether |
| bis(2-chloroethoxy)methane | 2,2'-dichloroethoxy methane |
| bis(2-chloroisopropyl)ether | 2,2'-dichloroisopropyl ether |
| bis(chloromethyl)ether | (sym)dichloromethyl ether |
| bis(2-ethylhexyl)phthalate | 2,2'-diethylhexyl phthalate |
| bromodichloromethane | dichlorobromomethane |
| bromoform | tribromomethane |
| bromomethane | methyl bromide |
| carbon tetrachloride | tetrachloromethane |
| 4-chloro-3-methylphenol | para-chloro-meta-cresol |
| chloroethane | ethylchloride |
| chloroform | trichloromethane |
| chloromethane | methyl chloride |
| 2-chlorophenol | para-chlorophenol |
| chrysene | 1,2-benzphenanthrene |
| 4,4'-DDD | dichlorodiphenyldichloroethane<br>p,p'-TDE<br>tetrachlorodiphenylethane |
| 4,4'-DDE | dichlorodiphenyldichloroethylene<br>p,p'-DDX |
| 4,4'-DDT | dichlorodiphenyltrichloroethane |
| dibenzo(a,h)anthracene | 1,2,5,6-dibenzanthracene |
| dibromochloromethane | chlorodibromomethane |
| 1,2-dichlorobenzene | ortho-dichlorobenzene |
| 1,3-dichlorobenzene | meta-dichlorobenzene |
| 1,4-dichlorobenzene | para-dichlorobenzene |
| dichlorodifluoromethane | difluorodichloromethane<br>fluorocarbon-12 |
| 1,1-dichloroethane | ethylidene chloride |
| 1,2-dichloroethane | ethylene chloride<br>ethylene dichloride |
| 1,1-dichloroethene | 1,1-dichloroethylene |
| (trans)-1,2-dichloroethene | acetylene dichloride<br>1,2(trans)-dichloroethylene |
| 1,2-dichloropropane | propylene dichloride |
| (cis & trans)1,3-dichloropropene | (cis & trans)1,3-dichloropropylene |
| diethyl phthalate | ethyl phthalate |
| 2,4-dimethylphenol | 2,4-xylenol |
| di-n-octyl phthalate | di(2-ethylhexyl)phthalate |
| 4,6-dinitro-2-methylphenol | 4,6-dinitro-ortho-cresol |
| 1,2-diphenylhydrazine | hydrazobenzene |
| endosulfan I | a-endosulfan-alpha |
| endosulfan II | b-endosulfan-beta |
| fluorene | (alpha)-diphenylene methane |
| hexachlorobenzene | perchlorobenzene |
| hexachlorocyclopentadiene | perchlorocyclopentadiene |
| hexachloroethane | perchloroethane |
| indeno(1,3,3-cd)pyrene | 2,3-ortho-phenylene pyrene |
| isophorone | 3,5,5-trimethyl-2-cyclohexen-1-one |
| methylene chloride | dichloromethane |
| 2-nitrophenol | para-nitrophenol |
| 4-nitrophenol | ortho-nitrophenol |
| N-nitrosodimethylamine | dimethyl-nitrosoamine |
| N-nitrosodipropylamine | N-nitroso-di-n-propylamine |
| N-nitrosodiphenylamine | diphenyl-nitrosoamine |
| PCB-1016 | Arochlor-1016 |
| PCB-1221 | Arochlor-1221 |
| PCB-1232 | Arochlor-1232 |
| PCB-1242 | Arochlor-1242 |
| PCB-1248 | Arochlor-1248 |
| PCB-1254 | Arochlor-1254 |
| PCB-1260 | Arochlor-1260 |
| 2,3,7,8-tetrachlorodibenzo-p-dioxin | TCDD |
| 1,1,2,2-tetrachloroethane | acetylene tetrachloride |
| tetrachloroethene | perchloroethylene<br>tetrachloroethylene |
| toluene | methylbenzene<br>toluol |
| 1,1,1-trichloroethane | methyl chloroform |
| 1,1,2-trichloroethane | vinyl trichloride |
| trichloroethene | trichloroethylene |
| trichlorofluoromethane | fluorocarbon-11<br>fluorotrichloromethane |
| vinyl chloride | chloroethene<br>chloroethylene |

sewer system is also required. Verification of the entry of such chemicals into the aquatic environment will have to be established by subsequent sampling of POTW treatment plant influents and by direct analysis of process effluents when such sampling is required by categorical pretreatment standards. The task of determining the presence of priority pollutants in wastewater discharges is complex. However, since national emphasis is being placed on control of toxic pollutants, such information is essential to insure compliance with the regulations.

The gathering of industrial discharge data in St. Louis is regulated by ordinance. The questionnaire packet will be sent to industries by registered mail and ninety (90) days allotted for filing. After sixty (60) days, a follow-up letter will be mailed as a reminder that only thirty (30) days remain to comply with the submittal deadline. At any time during the 90 day period, MSD will provide assistance to companies having difficulty filling out the forms. If at the end of the 90 day period MSD has not received from the company the completed questionnaire nor any written correspondence relative to the questionnaire, MSD will mail a 90 day ordinance violation. The basic administrative procedure for initiating this self-reporting by industry is depicted symbolically in Figure 2-11.

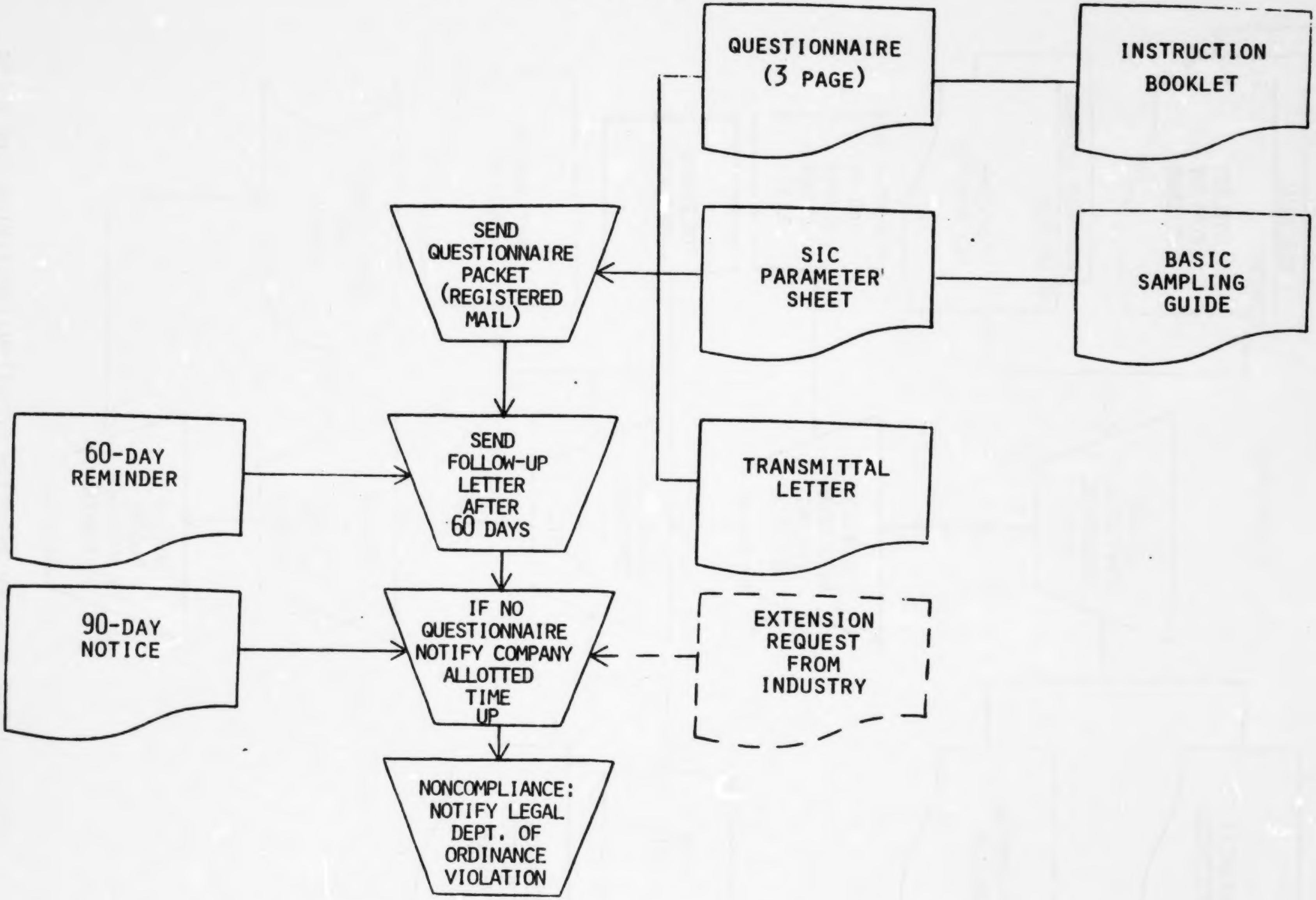
Because of the time limits placed on the development of a pretreatment program in St. Louis, i.e., completion of the industrial user survey was required by December 31, 1980, questionnaires were to be sent to regulated industries in St. Louis in early fall. It will be the continued responsibility of each company to update its questionnaire when necessary to insure that the information and data on file with the District are current.

## Other Fine-Tuning Needs

The national pretreatment program requires the regulation of twenty-one industrial subcategories. It also requires that 95% of the industrial users in each of these industrial subcategories comply with categorical pretreatment standards. MSD has interpreted this requirement to mean that they can no longer utilize a water usage cut-off as a base for locating, identifying, and regulating industries discharing to the collection and treatment systems. Instead, they must now enumerate and locate all industries within a specified industrial subcategory. In addition, 95% of these industries will have to comply with the categorical pretreatment standards and reporting provisions of the Pretreatment Regulations. Figure 2-12 is a schematic presentation of the general procedures and resources MSD will most likely utilize in locating and identifying industries.

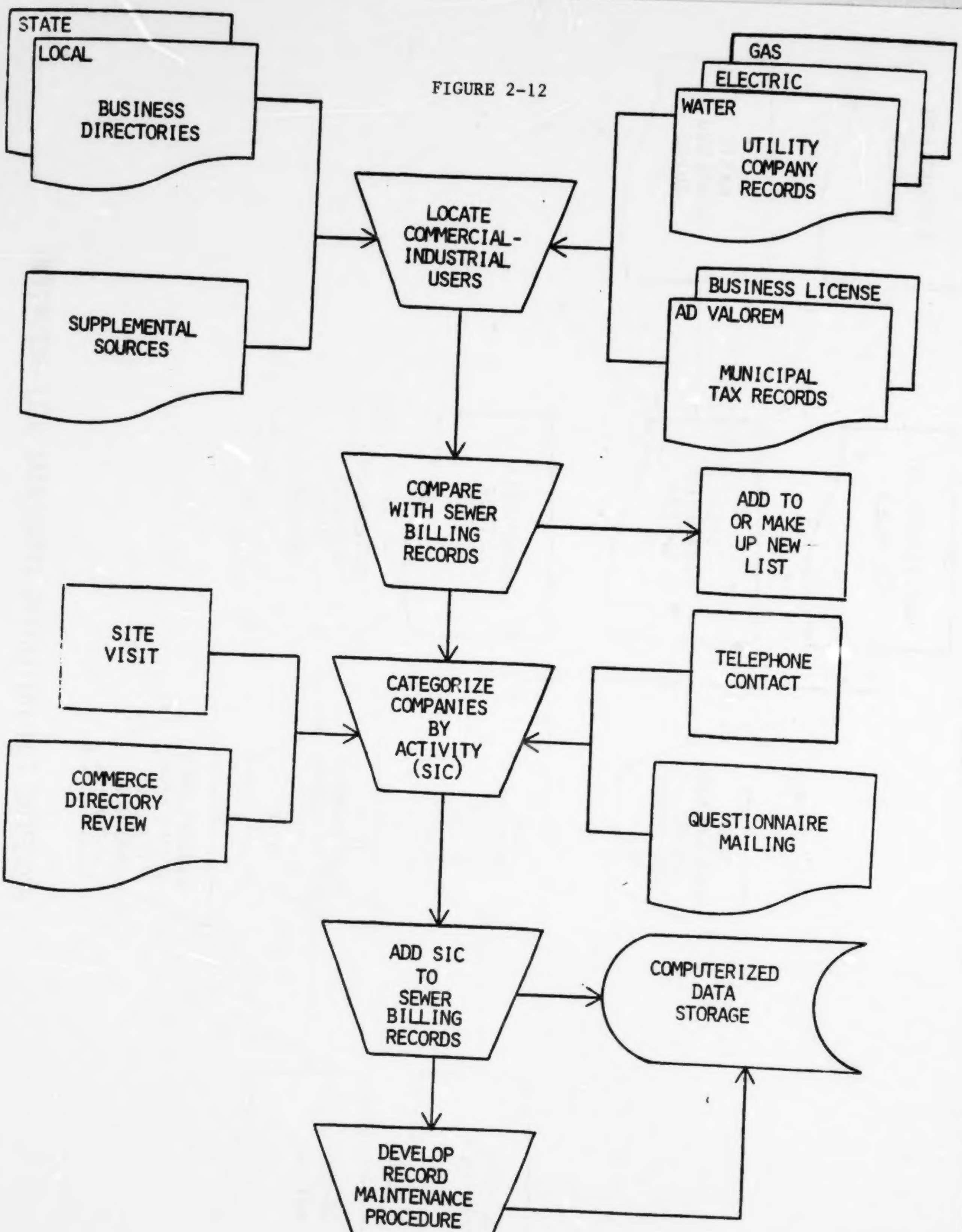
In its future program, MSD will rely heavily, as it does now, on utility company records with water company records used most extensively. However, MSD will also look to electric and gas utility records as possible source documents. Municipal tax records such as ad valorem tax roles or business license records will also be utilized. MSD will take advantage of available business directories, both local and state, to cross reference industrial location and identity. A supplemental source of industry identification information would be Dun and Bradstreet's DMI Market Profile. However,

FIGURE 2-11


QUESTIONNAIRE (3 PAGE)
INSTRUCTION BOOKLET
SEND QUESTIONNAIRE PACKET (REGISTERED MAIL)
SIC PARAMETER' SHEET
BASIC SAMPLING GUIDE
60-DAY REMINDER
SEND FOLLOW-UP LETTER AFTER 60 DAYS
TRANSMITTAL LETTER
90-DAY NOTICE
IF NO QUESTIONNAIRE NOTIFY COMPANY ALLOTTED TIME UP
EXTENSION REQUEST FROM INDUSTRY
NONCOMPLIANCE: NOTIFY LEGAL DEPT. OF ORDINANCE VIOLATION

PROCEDURE FOR INITIATING INDUSTRIAL SELF-REPORTING

FIGURE 2-12


STATE
LOCAL
BUSINESS DIRECTORIES
SUPPLEMENTAL SOURCES
LOCATE COMMERCIAL-INDUSTRIAL USERS
GAS
ELECTRIC
WATER
UTILITY COMPANY RECORDS
BUSINESS LICENSE
AD VALOREM
MUNICIPAL TAX RECORDS
COMPARE WITH SEWER BILLING RECORDS
ADD TO OR MAKE UP NEW LIST
SITE VISIT
COMMERCE DIRECTORY REVIEW
CATEGORIZE COMPANIES BY ACTIVITY (SIC)
TELEPHONE CONTACT
QUESTIONNAIRE MAILING
ADD SIC TO SEWER BILLING RECORDS
COMPUTERIZED DATA STORAGE
DEVELOP RECORD MAINTENANCE PROCEDURE

PRETREATMENT PROGRAM INDUSTRY LOCATION/IDENTIFICATION NEEDS

MSD will thoroughly evaluate the economics associated with using such a private service. MSD will then compare the information gleaned from these various sources with its present billing records and add previously unregulated companies to its Master Control List.

MSD is presently contacting all of its commerical/industrial accounts for which it does not have an SIC code to ascertain their business activity. MSD has approximately 24,000 such metered accounts and are contacting each unidentified account by phone. Companies can be contacted by phone, mailed a questionnaire, actually visited, or looked up on various business directories. MSD has considered contact by phone to be the most efficient and economical method for initially categorizing companies by work activity.

Once all businesses are categorized, MSD will add their SIC code to its billing records. Because of the large number of accounts, all of MSD's records are maintained on computer data storage systems for rapid recall and processing. When all accounts have been categorized, a record maintenance system for updating and maintaining current identification will be necessary. MSD is considering alternatives at this time, all of which utilize computer processing techniques.

## THE BERGEN COUNTY SURVEY EXPERIENCE

### Background Experience

An Industrial Wastewater Survey was conducted for the Bergen County Utilities Authority (BCUA) by their consulting engineers, Clinton Bogert Associates, Fort Lee, New Jersey.

The Authority is comprised of 43 municipalities in northeastern New Jersey. The secondary treatment plant is currently under expansion to provide 75 mgd capacity. Total non-domestic strength industrial discharge to the treatment works is approximately 15 percent of the total volume at the plant influent.

The Bergen County Utilities Authority's Industrial Wastewater Survey will serve as the data base for the industrial waste control program. BCUA has three major reasons for establishing the industrial waste control program. Foremost are the regulatory requirements resulting from the Federal Clean Water Act. The other reasons are to protect the treatment works and environment and to serve as a basis for billing industrial users of the system for revenues.

### Scope

The industrial survey encompassed industrial dischargers in the Authority's service area that, by nature of business, were included in the following groups as classified in the Standard Industrial Classification Manual (SIC, 1972), published by the U.S. Office of Management and Budget:

> Division A - Agriculture, Forestry and Fishing (SIC Major Groups 01-09) - This division includes establishments primarily engaged in agricultural production, forestry, commercial fishing, hunting and trapping, and related services.

Division B - Mining (SIC Major Groups 10-14) - This division includes all establishments engaged in mining, including extraction of minerals occurring naturally, liquids, gases, operations such as quarrying, well operation, milling, and other operations customarily done as part of mining activity.

Division D - Manufacturing (SIC Major Groups 30-39) - The manufacturing division includes establishments engaged in the mechanical or chemical transformation of materials or substances into new products.

Division E - Transportation, Communications, Electric, Gas, and Sanitary Services (SIC Major Groups 40-49) - This division includes establishments providing passenger and freight transportation, communication services, electricity, gas, steam, water, or sanitary services, and the U.S. Postal Service.

Division I - Services (SIC Major Groups 70-89) - This division includes establishments primarily engaged in providing a wide variety of services for individuals, business and government establishments, and other organizations. Hotels, establishments providing personnel business, repair and amusement services, health, legal, engineering, and other professional services are included.

Industries in the Authority's service area have been identified, and separate lists were compiled for all industries by SIC division.

The Data Acquisition steps involved in developing the industrial wastewater survey for BCUA are outlined and shown in Figure 2-13. Steps include:

- Compile master list of industries
- Compile water use data
- Preliminary classification of industries
- SIC Categorization
- Establish sampling program
- Finalize classification and charge class
- Store data
- Retrieve data as required.

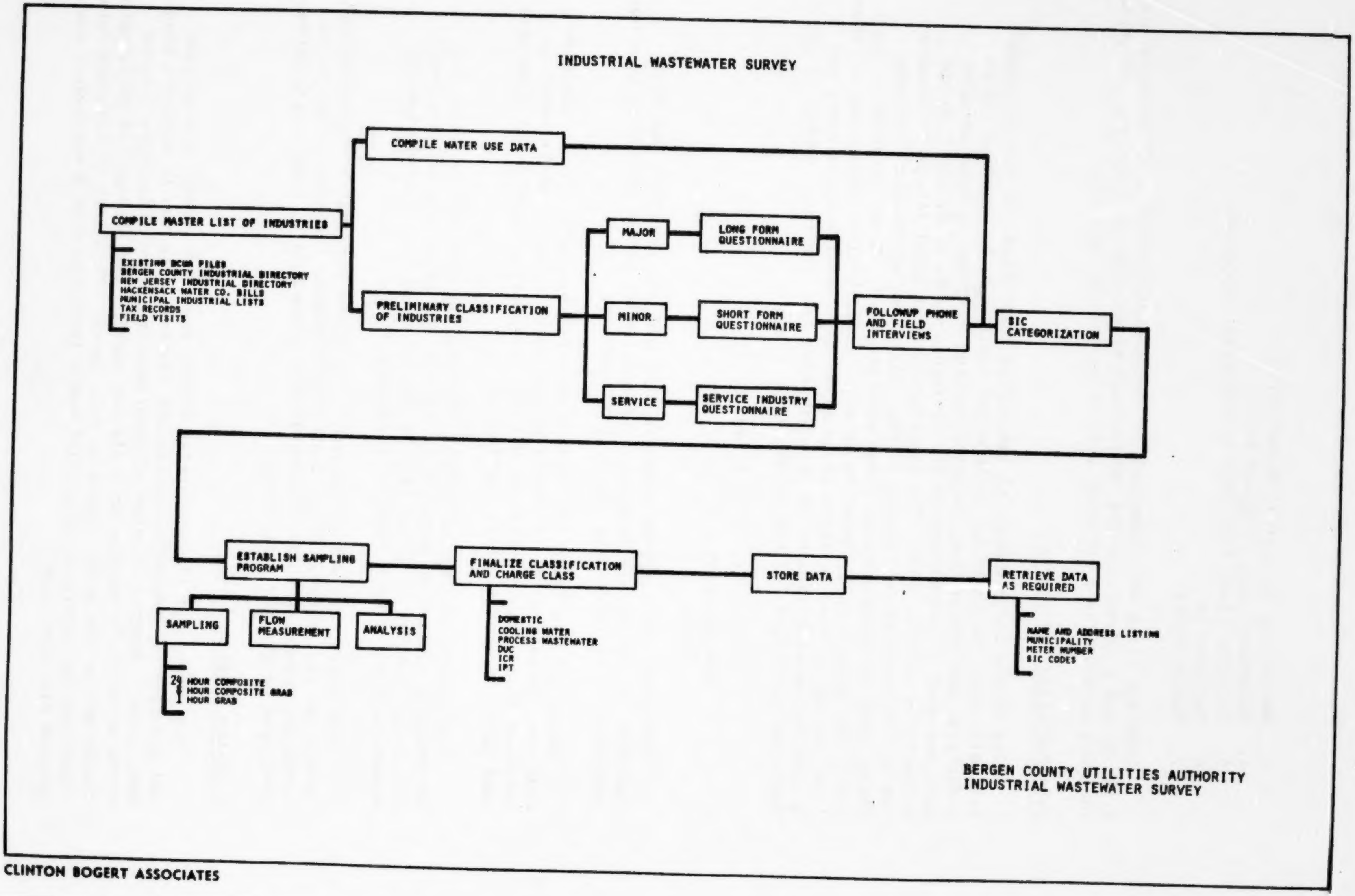
The results of the industrial wastewater survey can be used by the Authority in its industrial waste control program for monitoring, control, reporting, and billing.

## Identification of All Industries

The initial phase of an industrial control program is the identification and categorization of all industries using the wastewater treatment system. For this purpose, an industrial survey was undertaken to provide data for management of the environmental and economic problems associated with industrial wastewater discharges into the BCUA system in compliance with Federal Grant and NPDES Permit requirements. An industry list was compiled using the following sources:

1. Existing Bergen County Utilities Authority's files
2. Bergen County Industrial Directory

FIGURE 2-13


INDUSTRIAL WASTEWATER SURVEY
COMPILE MASTER LIST OF INDUSTRIES
EXISTING BCUA FILES
BERGEN COUNTY INDUSTRIAL DIRECTORY
NEW JERSEY INDUSTRIAL DIRECTORY
HACKENSACK WATER CO. BILLS
MUNICIPAL INDUSTRIAL LISTS
TAX RECORDS
FIELD VISITS
COMPILE WATER USE DATA
PRELIMINARY CLASSIFICATION OF INDUSTRIES
MAJOR
MINOR
SERVICE
LONG FORM QUESTIONNAIRE
SHORT FORM QUESTIONNAIRE
SERVICE INDUSTRY QUESTIONNAIRE
FOLLOWUP PHONE AND FIELD INTERVIEWS
SIC CATEGORIZATION
ESTABLISH SAMPLING PROGRAM
SAMPLING
FLOW MEASUREMENT
ANALYSIS
24 HOUR COMPOSITE
8 HOUR COMPOSITE GRAB
1 HOUR GRAB
FINALIZE CLASSIFICATION AND CHARGE CLASS
DOMESTIC
COOLING WATER
PROCESS WASTEWATER
DUC
ICR
IPT
STORE DATA
RETRIEVE DATA AS REQUIRED
NAME AND ADDRESS LISTING
MUNICIPALITY
METER NUMBER
SIC CODES
BERGEN COUNTY UTILITIES AUTHORITY
INDUSTRIAL WASTEWATER SURVEY

CLINTON BOGERT ASSOCIATES

3. New Jersey Industrial Directory
4. Hackensack Water Company bills
5. Industry Lists furnished by municipal personnel
6. Tax records
7. Field visits

Separate lists were compiled for all industries included in Divisions A, B, D, and E (Manufacturing Industries) of the SIC Code and all industries included in Division I (Service Industries) of the SIC Code.

## Data Gathering Procedures

Due to the large number of industries identified, it was determined initially that the required information could best be obtained via an Industrial Wastewater Questionnaire mailing program. A questionnaire form was sent to industries in SIC Divisions A, B, D, E, and I in the Authority's service area. The questionnaire included detailed requests for all information pertaining to the industries'wastewater discharge. Three types of questionnaire forms were prepared. These included a "long form" for industries believed to be major contributing industries, a "short form" for industries believed to be minor contributing industries, and a form for service industries (SIC Division I). The total number of industries identified for the survey was:

| | |
|---|---|
| SIC Division A, B, D, and E | 1468 |
| SIC Division I | 2288 |
| Total | 3756 |

The quick and complete response that had been hoped for was never realized, and to obtain necessary information it became necessary to conduct phone and field interviews for most industries.

Where water consumption records were not available (i.e., where more than one rented premise is served by one water meter or where water is obtained from unmetered private wells), estimates of wastewater flow were made based on questionnaire information.

Literature information and/or sampling was used as the basis for determining wastewater strength (i.e., BOD and SS). SIC codes allowed for categorization of industries by business and facilitated strength determination for each industry's wastewater.

Some industries were reluctant to disclose explicit process information needed for the survey. Those industries claiming confidentiality of information regarding their wastewater were requested to comply with procedures developed by EPA for such cases.

## Sampling Program

The purpose of the industrial survey was to determine the quality and quantity of industrial wastewater discharged to the Authority's treatment plant. However, review of questionnaires from industries located in the Authority's service area did not specify the strength of pollutants discharged to the sewer system in most cases. This lack of adequate data regarding the nature of industrial waste indicated that a wastewater sampling program was necessary.

All industrial questionnaires were reviewed and evaluated for quantity and quality of sanitary flow, products manufactured, cooling water discharge, and other flows discharged into the sanitary sewer system. Those industries that were selected for sampling were further investigated for quality of sanitary sewer discharge, discharge patterns, and points of sampling.

The selection of industries to be sampled was based on flow, discharge strength, and industrial classification code. All industries discharging more than 50,000 gallons per day were included in the sampling program because preliminary review of their questionnaires indicated a significant portion of industrial pollutant loading was likely to be contributed by these industries. Three groups of industries were selected and sampled by the following methods:

- 24 hour composite sampling - 36 industries were sampled for 24 hours; composite sample by Automatic Sampler. All those industries with potentially high pollutant loadings and that operated more than one work shift per day were sampled by 24-hour composite sampler.

- 8 hour composite grab - 32 industries were sampled by taking grab samples at every hour for 8 hours and compositing the samples. This list included those industries whose flow was less than 50,000 gallons per day but had the potential of discharging high concentrations of wastewater pollutants.

- One-hour grab samples - 22 industries were sampled by taking grab samples. Those industries whose flow was relatively small were sampled by the grab sampling technique.

A van was used as a storehouse on wheels to carry all required equipment including safety equipment and field personnel to carry out the sampling program.

The automatic sampling program was carried out with the aid of the Authority's sampling crew. Those industries scheduled for sampling were investigated for discharge patterns, water meter location, and sampling points. The sampling points were dye tested and surveyed prior to sampling, when necessary. After review, the industries were then scheduled for sampling.

Automatic samplers were used for the 24-hour composite sampling and were capable of taking 24 discrete 500 ml samples over a 24-hour period. The 500 ml bottles were individually composited by setting the internal time to take a sample every 15 minutes which deposited 4 samples in each 500 ml bottle. At the end of the 24-hour period, the 24 bottles were then manually composited based on flow measurements, where possible.

Industrial flows into the sanitary sewer were measured using Dipper Flow Meters where possible. The control devices required for a given installation were determined by field investigation. The types of control devices used were Lagco Flumes, Parshall Flumes, and Weir Boxes. Flows were also determined utilizing pipe and volumetric measurements using existing pump facilities.

The flowmeters were equipped with a flow chart, totalizer, and cams that described the flow for a given control device using table of conversion values developed by the manufacturer. When flow tables were not available, they were developed using the appropriate formula.

When it was not possible to measure flow, water meter readings were taken at the beginning and end of the sampling period. An estimate of water use into product, cooling, and other non-sanitary discharges was developed. The remainder was estimated as sanitary discharge flow.

One-hour and eight-hour grab sampling methods utilized manual sample collection. The eight-hour sampling program composited the samples collected based on the industries' hourly water meter readings.

Testing of samples was coordinated through the Authority. The Authority's personnel analyzed in their laboratory for BOD, SS, temperature, and pH. An outside testing laboratory was used whenever organics, metals, biological, or radioactive tests were required.

## Use of Data Files

Information compiled on each industry in the Authority's service area has been stored in a computer data base which gives maximum flexibility for producing the various reports that will be needed. Additional programming would allow creation of other reports, from information in the data base, for possible future requirements.

Printouts of the Industrial Survey data base for the service industry were prepared. Other computer outputs have been generated from each data base, including:

- Name and address file
- Listing by municipality
- Listing by meter number
- Listing by SIC Code

## Identification of Priority Pollutant Dischargers

Utilization of a computer for data management provides flexibility to quickly and easily identify industrial users subject to categorical pretreatment standards. Using a sort routine, a printout of the entire industrial survey data base was obtained in order of SIC code. From this printout, it is a simple matter to determine the total number of industries in each SIC group listed in Appendix C of the General Pretreatment Regulations.

## Heavy Metals Source Determination

Clinton Bogert Associates conducted a study of heavy metals source determination for BCUA in 1977. This work included quantification of industrial pollutant loading to the treatment works. Determinations included review of previous heavy metals sampling at the plant, in the sewer system, and new sampling and testing of representative industrial sources.

For the BCUA system, the findings of the study indicated the percentages of various heavy metals reaching the treatment works from various sources is as follows:

| | |
|---|---|
| Public and Private Water Supplies | 4.5% |
| Industrial Processes | 41.4% |
| Domestic Households | 30.3% |
| Infiltration and Inflow | 23.8% |

This information indicates that, although industrial sources are a significant source of heavy metals, quantification of priority pollutant loading as reported on self-monitoring reports may not, for many POTWs, represent the total priority pollutant loading at the POTW influent.

## THE LOS ANGELES COUNTY SURVEY EXPERIENCE

### Background Information

The Sanitation Districts of Los Angeles County were created in the 1920's under the authority granted by the California County Sanitation Districts Act of 1923. Under this law, a sanitation district could provide sewerage facilities to treat and dispose of wastewater from logical areas determined by geographical and topographical rather than political boundaries.

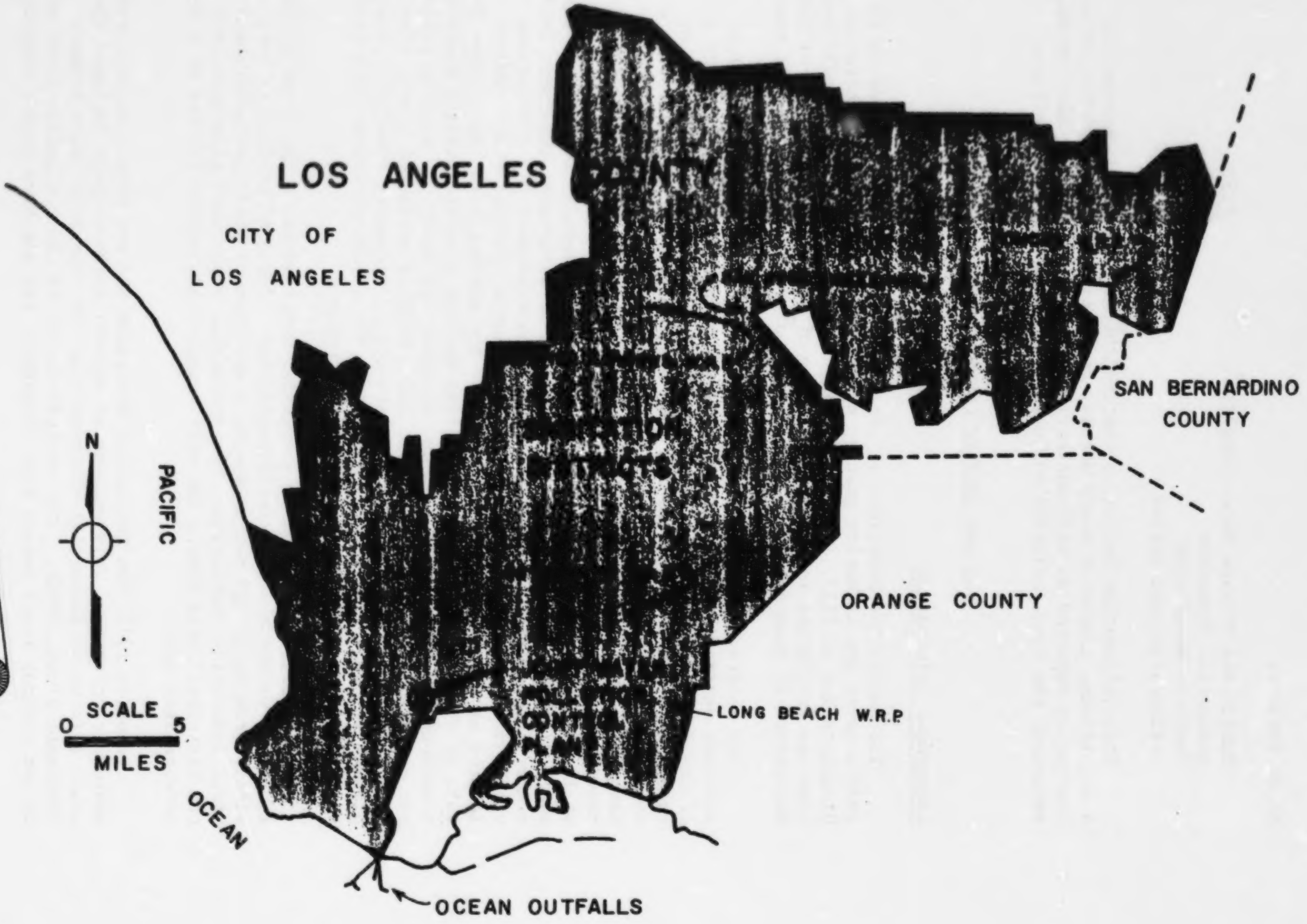
The Sanitation Districts of Los Angeles County now consist of 27 separate sanitation districts providing sewerage service to a major portion of Los Angeles County outside of the City of Los Angeles. Fifteen of these districts have combined in the Joint Outfall System to provide a common sewerage system for over 3,800,000 people, 750 square miles of area, and approximately 8,000 industrial companies. The Sanitation Districts provide and operate wastewater treatment and trunk sewer transport systems, while the local 72 cities within the Districts provide and maintain the small diameter collection sewers. Methods of wastewater treatment include primary, secondary, and tertiary at various treatment plant locations within the Districts. The Joint Water Pollution Control Plant (JWPCP) located at the south central portion of the service area (see Figure 2-14), is the largest treatment facility and now provides primary wastewater treatment and sludge digestion and disposal for about 350 million gallons per day (mgd) of wastewater. Five Joint Outfall activated sludge plants also daily treat about 80 mgd of wastewater. Secondary treatment is currently planned for about 200 mgd of capacity at the JWPCP, dependent upon Federal funding of treatment plant construction costs.

A significant portion of industrial development in the State of California is within the District's boundaries. Types of businesses vary widely from large oil refineries to a spectrum of small and moderately sized industrial businesses. The industrial wastewater program within the Districts' area covers the wide range of businesses typical of a large metropolitan area.

Prior to 1972, the Sanitation Districts did not have a major industrial wastewater program. This was due to several reasons which included the minor effects of industrial wastewater on the Districts' main primary treatment plant, JWPCP. The Districts, due to their organizational structure, do not control local sewers and, therefore, did not have direct contact

FIGURE 2-14

SANITATION DISTRICTS OF LOS ANGELES COUNTY


LOS ANGELES COUNTY
CITY OF
LOS ANGELES
SAN BERNARDINO
COUNTY
ORANGE COUNTY
LONG BEACH W.R.P.
PACIFIC
OCEAN
OCEAN OUTFALLS
N
SCALE
0
5
MILES

Reproduced from best available copy.

with industrial requests for sewer connections. The Districts regulated industrial sewer connections through a policy restricting discharges to the Districts' trunk sewers. This policy required that certain identification information on industrial sewer connections be forwarded to the Districts from the local cities. Prohibitions on wastewater constituents such as cyanide, low pH, flammable materials, and materials which could clog sewers were established. These prohibitions were enforced through local city ordinances or through the powers granted to the Districts under State laws. The regulation of industrial wastewater discharges was satisfactorily performed using the above procedures during the decade of the 1960's.

To be capable of meeting the goals of water quality believed by the Districts' management to be currently required, it was necessary to adopt improved means for control of industrial pollutants and for recovering the true costs of industrial wastewater treatment. The Districts, therefore, on April 1, 1972, adopted an ordinance regulating industrial wastewater discharges. This ordinance established an industrial waste permit program, a program for an equitable industrial user charge, and regulation of industrial wastewater pollutant discharges.

## Initial Phase of Districts' Program

From April through December of 1971, several drafts of an industrial waste ordinance were prepared. These drafts were reviewed by Districts' management, by personnel of several cities within the Sanitation Districts, and by representatives of various industrial associations. Meetings were also held with representatives of local cities, with several industrial associations, and with representatives of several large companies to obtain their input and comments on the proposed ordinance. The Districts' Wastewater Ordinance was adopted by all of the Districts' Board of Directors and became effective on July 1, 1972.

To locate and notify all industrial companies subject to the Wastewater Ordinance, the Sanitation Districts obtained a computer file from the Los Angeles County Tax Assessors Office for all property zoned as industrial. In the fall of 1972, the Districts mailed a copy of the Wastewater Ordinance and an information booklet describing the industrial waste regulatory program to approximately 70,000 parcels of industrially zoned property.

This initial mailing required industrial companies to apply for an industrial waste discharge permit and to file an industrial waste surcharge statement. In response to this mailing, literally thousands of telephone calls were received to protest the program or to seek clarification of the requirements. Due to the non-selectivity of the computer file used for the mailing, it was determined that a majority of the companies could be granted exemptions from permit and surcharge requirements. An exemption claim form was furnished in the information booklet for this purpose.

The first few years of the Districts' industrial waste regulatory (pretreatment) program were spent in informing the companies of their legal requirements to file and pay an industrial waste surcharge and to apply for an industrial waste permit. No major source control efforts for pollutants were begun until July 1, 1975.

## Industrial Waste Program Elements

A table of organization of the Districts' Industrial Waste Section is shown in Figure 2-15. The basic elements of the Districts' Industrial Waste Section are:

- Permit Approval Sub-section
- Field Engineering Sub-section
  - Inspection of Industrial Plants
  - Monitoring of Industrial Wastes
- Industrial Waste Engineer Specialists (in the following fields)
  - Petroleum Refining & Production
  - Basic Metals
  - Metals Finishing and Toxics
  - Food Processing
  - Chemical Process
  - Paper Mills & Textiles
- Industrial Waste Surcharge Sub-section

These sub-sections cooperate to implement the following major industrial waste regulatory programs:

- Permit Program
- Industrial Self-monitoring Reports
- Field Inspections
- Flow Meter Approval and Calibration
- Source Control of Toxic Materials
- Enforcement Activities
- Surcharge Collection
- Pollution Control Technical Assistance
- Treatment Plant Upset Prevention

## Permit Program

The Sanitation Districts established an industrial wastewater permit program to identify and regulate industrial dischargers. All existing as well as new industrial companies are now required to submit information describing their wastewater discharges to obtain a permit (See Figure 2-16). Three classes of permits as shown in Table 2-1 are used to define information required from industrial companies to obtain a permit. All small, existing companies with no discharge of toxic materials are issued permits based only on the information on the permit form and a questionnaire which obtains corroborating information that no toxic or problem wastes are discharged. The large number of companies in this category and the limited time and manpower available indicated a minimum permit requirement was necessary. Companies discharging over 10,000 gallons of wastewater per day or having toxic wastewater constituents are in categories requiring a more substantial amount of information be submitted. Permit requirements for these categories include submittal of detailed plans of industrial pretreatment facilities. Companies in permit class 2 are required to submit somewhat less information than class 1. Of the Districts' approximately 6,100 existing industrial wastewater dischargers under permit, about 370 are in permit category 1 and about 2,000 are in category 2.

FIGURE 2-15

INDUSTRIAL WASTE SECTION 1978

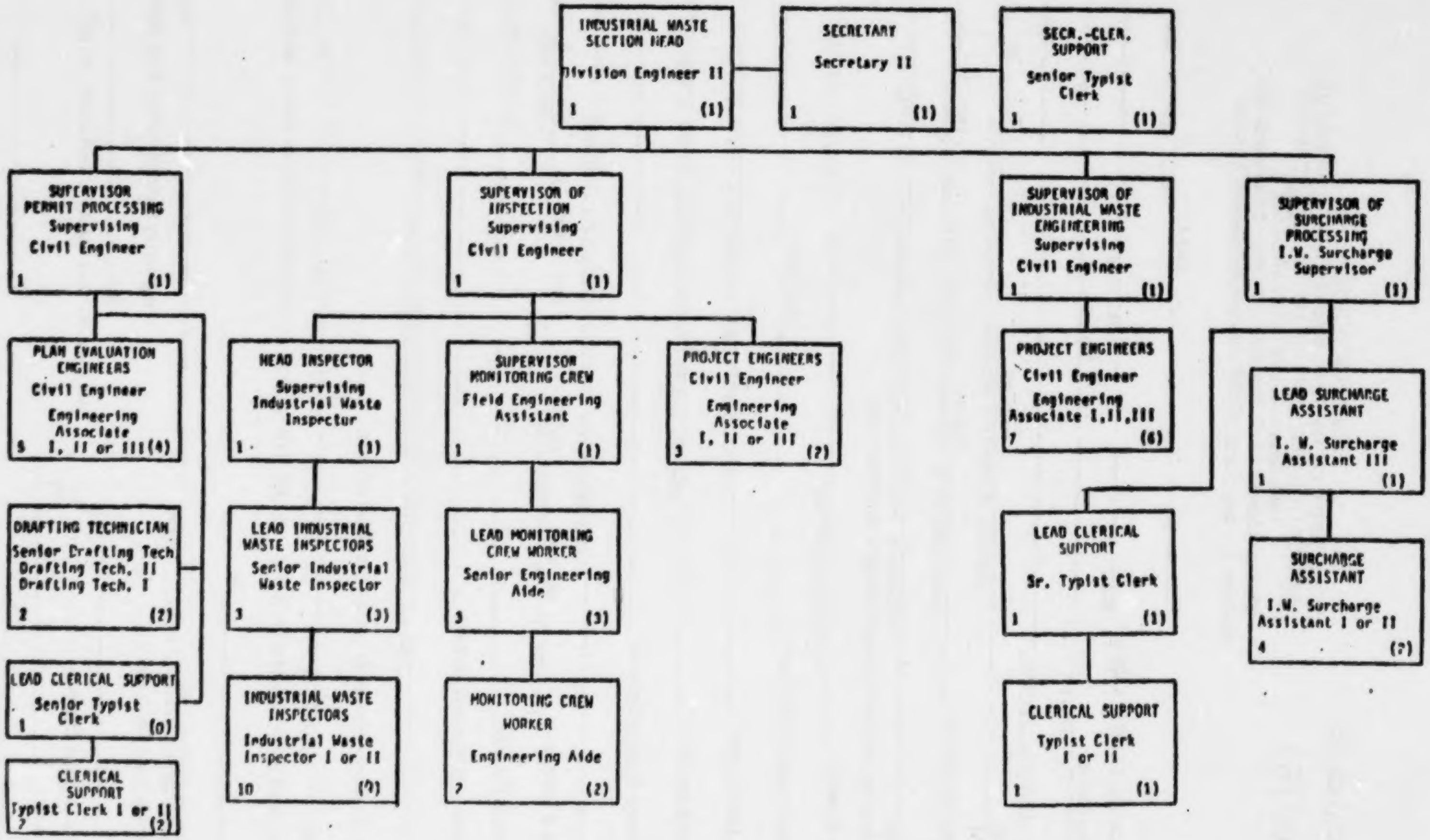
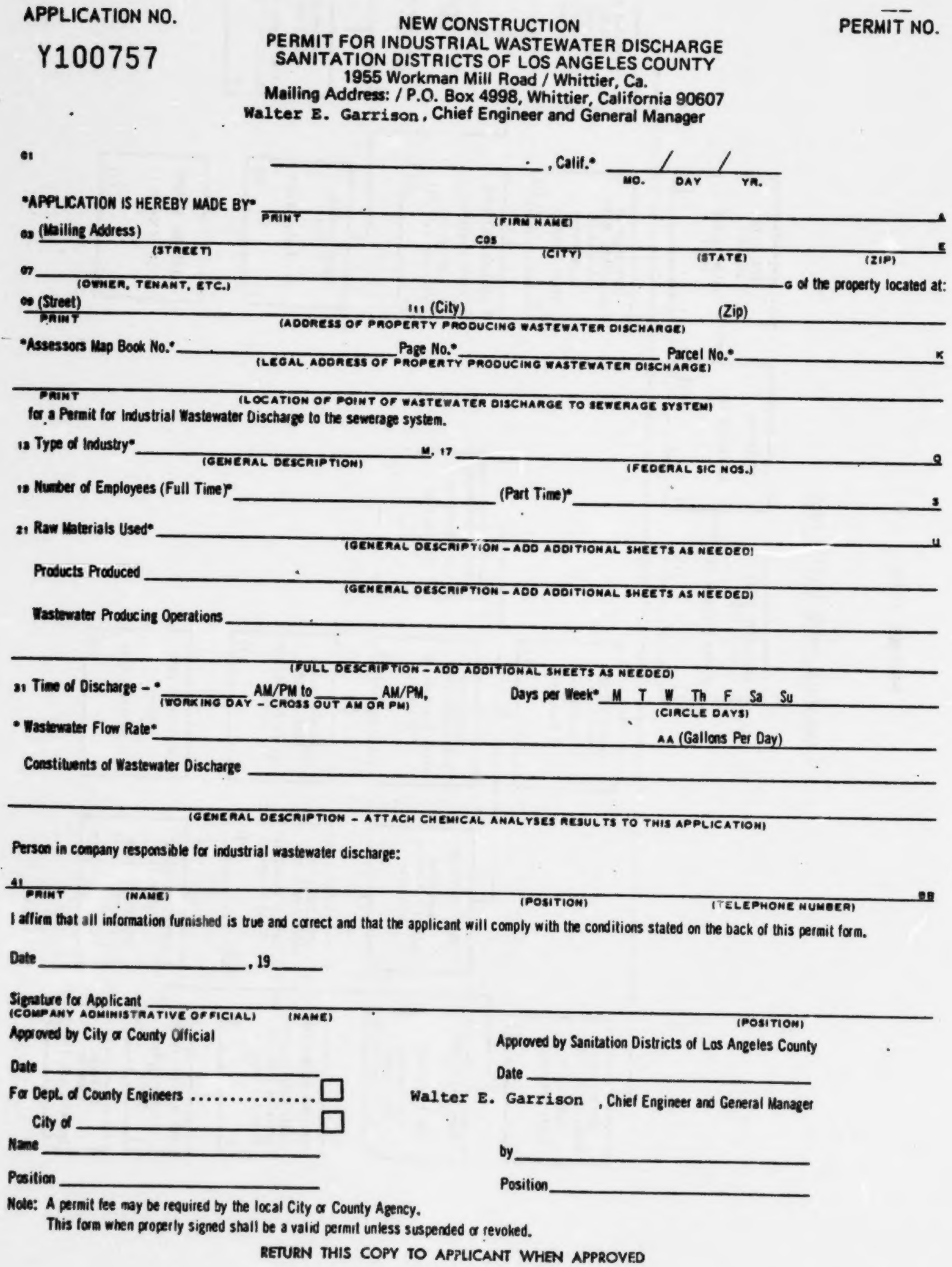

INDUSTRIAL WASTE SECTION HEAD
Division Engineer II
1 (1)
SECRETARY
Secretary II
1 (1)
SECR.-CLER. SUPPORT
Senior Typist Clerk
1 (1)
SUPERVISOR PERMIT PROCESSING
Supervising Civil Engineer
1 (1)
PLAN EVALUATION ENGINEERS
Civil Engineer
Engineering Associate I, II or III
5 (4)
DRAFTING TECHNICIAN
Senior Drafting Tech
Drafting Tech. II
Drafting Tech. I
2 (2)
LEAD CLERICAL SUPPORT
Senior Typist Clerk
1 (0)
CLERICAL SUPPORT
Typist Clerk I or II
2 (2)
SUPERVISOR OF INSPECTION
Supervising Civil Engineer
1 (1)
HEAD INSPECTOR
Supervising Industrial Waste Inspector
1 (1)
LEAD INDUSTRIAL WASTE INSPECTORS
Senior Industrial Waste Inspector
3 (3)
INDUSTRIAL WASTE INSPECTORS
Industrial Waste Inspector I or II
10 (9)
SUPERVISOR MONITORING CREW
Field Engineering Assistant
1 (1)
LEAD MONITORING CREW WORKER
Senior Engineering Aide
3 (3)
MONITORING CREW WORKER
Engineering Aide
2 (2)
PROJECT ENGINEERS
Civil Engineer
Engineering Associate I, II or III
3 (2)
SUPERVISOR OF INDUSTRIAL WASTE ENGINEERING
Supervising Civil Engineer
1 (1)
PROJECT ENGINEERS
Civil Engineer
Engineering Associate I,II,III
7 (6)
LEAD CLERICAL SUPPORT
Sr. Typist Clerk
1 (1)
CLERICAL SUPPORT
Typist Clerk I or II
1 (1)
SUPERVISOR OF SURCHARGE PROCESSING
I.W. Surcharge Supervisor
1 (1)
LEAD SURCHARGE ASSISTANT
I. W. Surcharge Assistant III
1 (1)
SURCHARGE ASSISTANT
I.W. Surcharge Assistant I or II
4 (2)

FIGURE 2-16



APPLICATION NO.

Y100757

**NEW CONSTRUCTION**
**PERMIT FOR INDUSTRIAL WASTEWATER DISCHARGE**
**SANITATION DISTRICTS OF LOS ANGELES COUNTY**
1955 Workman Mill Road / Whittier, Ca.
Mailing Address: / P.O. Box 4998, Whittier, California 90607
Walter E. Garrison, Chief Engineer and General Manager

PERMIT NO.

01 ______________________, Calif.* ___/___/___ MO. DAY YR.

*APPLICATION IS HEREBY MADE BY* ______________________ PRINT (FIRM NAME) A

03 (Mailing Address) ______________________ (STREET) C05 (CITY) (STATE) (ZIP) E

07 ______________________ (OWNER, TENANT, ETC.) G of the property located at:

09 (Street) PRINT 111 (City) (Zip) (ADDRESS OF PROPERTY PRODUCING WASTEWATER DISCHARGE)

*Assessors Map Book No.* ____________ Page No.* ____________ Parcel No.* ____________ K (LEGAL ADDRESS OF PROPERTY PRODUCING WASTEWATER DISCHARGE)

______________________ PRINT (LOCATION OF POINT OF WASTEWATER DISCHARGE TO SEWERAGE SYSTEM)

for a Permit for Industrial Wastewater Discharge to the sewerage system.

13 Type of Industry* ____________ (GENERAL DESCRIPTION) M, 17 ____________ (FEDERAL SIC NOS.) Q

19 Number of Employees (Full Time)* ____________ (Part Time)* ____________ S

21 Raw Materials Used* ______________________ (GENERAL DESCRIPTION – ADD ADDITIONAL SHEETS AS NEEDED) U

Products Produced ______________________ (GENERAL DESCRIPTION – ADD ADDITIONAL SHEETS AS NEEDED)

Wastewater Producing Operations ______________________

______________________ (FULL DESCRIPTION – ADD ADDITIONAL SHEETS AS NEEDED)

31 Time of Discharge – * ________ AM/PM to ________ AM/PM, (WORKING DAY – CROSS OUT AM OR PM) Days per Week* M T W Th F Sa Su (CIRCLE DAYS)

* Wastewater Flow Rate* ______________________ AA (Gallons Per Day)

Constituents of Wastewater Discharge ______________________

______________________ (GENERAL DESCRIPTION – ATTACH CHEMICAL ANALYSES RESULTS TO THIS APPLICATION)

Person in company responsible for industrial wastewater discharge:

41 ______________________ PRINT (NAME) (POSITION) (TELEPHONE NUMBER) BB

I affirm that all information furnished is true and correct and that the applicant will comply with the conditions stated on the back of this permit form.

Date ______________________, 19______

Signature for Applicant ______________________ (COMPANY ADMINISTRATIVE OFFICIAL) (NAME) (POSITION)

Approved by City or County Official

Date ______________________

For Dept. of County Engineers ................ ☐

City of ______________________ ☐

Name ______________________

Position ______________________

Approved by Sanitation Districts of Los Angeles County

Date ______________________

Walter E. Garrison, Chief Engineer and General Manager

by ______________________

Position ______________________

Note: A permit fee may be required by the local City or County Agency.
This form when properly signed shall be a valid permit unless suspended or revoked.

RETURN THIS COPY TO APPLICANT WHEN APPROVED

TABLE 2-1

## PERMIT CLASSIFICATIONS

| | Company Characteristics and Wastewater Characteristics | | |
|---|---|---|---|
| Permit Class | Discharge Quantity (gallons per day) | Company SIC No. Classification 1/ | Existing Facility or New Construction |
| 1. | 50,000 or more | Critical or Non-Critical | Existing or New |
| 2. | a. 10,000 to 50,000 | Critical or Non-Critical | Existing or New |
| | b. Under 10,000 | Critical or | New |
| 3. 2/ | Under 10,000 | Non-Critical only | Existing only |

Notes:

1/ The critical SIC (Standard Industrial Classification) No. classifications as given in the Districts' Permit Booklet, Table "A", are companies which are likely sources of toxic wastewater constituents.

2/ No companies constructing new facilities or having critical SIC No. classifications are included in Permit Class 3.

Table A, as mentioned in Table 2-1, is a categorization of industrial dischargers by Federal Standard Industrial Classification Code Numbers, (SIC No. as given in the Federal Standard Industrial Classification Manual, 1972). Table A describes the minimum level of wastewater pretreatment facilities necessary, the type and frequency of chemical analysis data required, and a determination that the industry is or is not in a "critical" SIC No. class. No companies judged to have a "critical" SIC No. are eligible for permit class 3. The types of required chemical analyses are indicated in letter codes in Table A and are given on the Districts "Critical Parameter Report Form" (See Figure 2-17), which is submitted with the permit application and at periodic intervals thereafter.

Previous to the Districts' inception of the industrial waste permit program, industrial companies were given permission to connect to the sewer through a sewer connection permit from the local city. To maintain local control of sewer and building construction activities and to facilitate the Districts' obtaining information on new industrial companies, the industrial waste permit is used jointly by the Districts and the local city. Good cooperation has been obtained in processing industrial waste permits through the local cities. The Sanitation Districts have also been able to assist various cities in solving industrial waste problems affecting the local city sewer system.

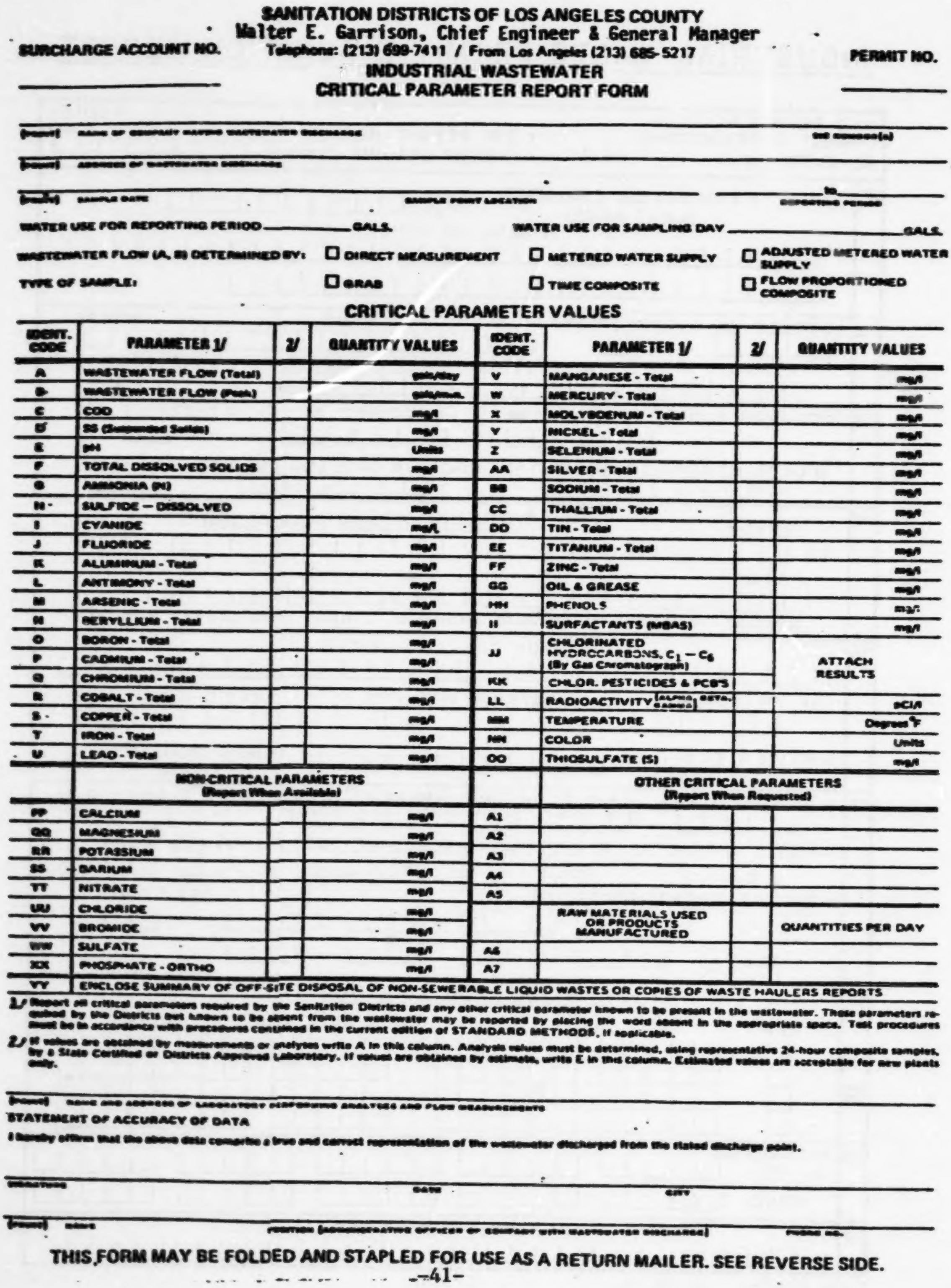
The Permit Processing Sub-section is headed by a Supervising Civil Engineer. Currently four engineers and two drafting technicians evaluate and approve the permit applications. The engineers concentrate on the more complete class 1 and 2 permits and the implementation of special programs such as the flow meter approval and calibration program, the spill containment program for toxic wastes, and a program to exclude rain water from the sewerage system. Clerical personnel using automatic, magnetic-card typewriters assist in permit issuance. Numerous standardized form letters have been developed which are customized for each permit and then typed rapidly using the automatic typewriters.

The data received in the permit evaluation is entered in a computerized data system using the form shown in Figure 2-18 and 2-19. This information is printed out in various formats, one of which is shown in Figure 2-20. This computerization of the permit records allows the Districts to compile lists of companies by SIC numbers, by location, by flow volumes, by type of waste, and by several other criteria. In a large metropolitan area, the large number of companies and the large amount of data on each company should require computerized records.

## Industrial Self-Monitoring

About 1,100 industrial companies are currently required to submit periodic self-monitoring reports for permit wastewater characterization purposes on frequencies of from one to four times per year. The items for which chemical analyses are required are shown on the Critical Parameter Report Form in Figure 2-17. The Sanitation Districts have not as yet implemented any major effort to monitor regularly for a wide spectrum of toxic organic compounds. The number and type of chemical analyses required is dependent upon the type of industrial company and the characteristics of their wastewater. For example, a meat packing company (slaughterhouse) would likely be required to analyze (or test) for total and peak

FIGURE 2-17



SANITATION DISTRICTS OF LOS ANGELES COUNTY
Walter E. Garrison, Chief Engineer & General Manager
Telephone: (213) 699-7411 / From Los Angeles (213) 685-5217
INDUSTRIAL WASTEWATER
CRITICAL PARAMETER REPORT FORM

SURCHARGE ACCOUNT NO. ______________

PERMIT NO. ______________

(PRINT) NAME OF COMPANY HAVING WASTEWATER DISCHARGE ______________ SIC NUMBER(S) ______________

(PRINT) ADDRESS OF WASTEWATER DISCHARGE ______________

(PRINT) SAMPLE DATE ______________ SAMPLE POINT LOCATION ______________ ______________ to ______________ REPORTING PERIOD

WATER USE FOR REPORTING PERIOD ______________ GALS. WATER USE FOR SAMPLING DAY ______________ GALS.

WASTEWATER FLOW (A, B) DETERMINED BY: ☐ DIRECT MEASUREMENT ☐ METERED WATER SUPPLY ☐ ADJUSTED METERED WATER SUPPLY

TYPE OF SAMPLE: ☐ GRAB ☐ TIME COMPOSITE ☐ FLOW PROPORTIONED COMPOSITE

CRITICAL PARAMETER VALUES

| IDENT. CODE | PARAMETER 1/ | 2/ | QUANTITY VALUES | IDENT. CODE | PARAMETER 1/ | 2/ | QUANTITY VALUES |
|---|---|---|---|---|---|---|---|
| A | WASTEWATER FLOW (Total) | | gals/day | V | MANGANESE - Total | | mg/l |
| B | WASTEWATER FLOW (Peak) | | gals/min. | W | MERCURY - Total | | mg/l |
| C | COD | | mg/l | X | MOLYBDENUM - Total | | mg/l |
| D | SS (Suspended Solids) | | mg/l | Y | NICKEL - Total | | mg/l |
| E | pH | | Units | Z | SELENIUM - Total | | mg/l |
| F | TOTAL DISSOLVED SOLIDS | | mg/l | AA | SILVER - Total | | mg/l |
| G | AMMONIA (N) | | mg/l | BB | SODIUM - Total | | mg/l |
| H | SULFIDE — DISSOLVED | | mg/l | CC | THALLIUM - Total | | mg/l |
| I | CYANIDE | | mg/l | DD | TIN - Total | | mg/l |
| J | FLUORIDE | | mg/l | EE | TITANIUM - Total | | mg/l |
| K | ALUMINUM - Total | | mg/l | FF | ZINC - Total | | mg/l |
| L | ANTIMONY - Total | | mg/l | GG | OIL & GREASE | | mg/l |
| M | ARSENIC - Total | | mg/l | HH | PHENOLS | | mg/l |
| N | BERYLLIUM - Total | | mg/l | II | SURFACTANTS (MBAS) | | mg/l |
| O | BORON - Total | | mg/l | JJ | CHLORINATED HYDROCARBONS, $C_1 - C_6$ (By Gas Chromatograph) | | ATTACH RESULTS |
| P | CADMIUM - Total | | mg/l | | | | |
| Q | CHROMIUM - Total | | mg/l | KK | CHLOR. PESTICIDES & PCB'S | | |
| R | COBALT - Total | | mg/l | LL | RADIOACTIVITY (ALPHA, BETA, GAMMA) | | pCi/l |
| S | COPPER - Total | | mg/l | MM | TEMPERATURE | | Degrees F |
| T | IRON - Total | | mg/l | NN | COLOR | | Units |
| U | LEAD - Total | | mg/l | OO | THIOSULFATE (S) | | mg/l |
| | NON-CRITICAL PARAMETERS (Report When Available) | | | | OTHER CRITICAL PARAMETERS (Report When Requested) | | |
| PP | CALCIUM | | mg/l | A1 | | | |
| QQ | MAGNESIUM | | mg/l | A2 | | | |
| RR | POTASSIUM | | mg/l | A3 | | | |
| SS | BARIUM | | mg/l | A4 | | | |
| TT | NITRATE | | mg/l | A5 | | | |
| UU | CHLORIDE | | mg/l | | RAW MATERIALS USED OR PRODUCTS MANUFACTURED | | QUANTITIES PER DAY |
| VV | BROMIDE | | mg/l | | | | |
| WW | SULFATE | | mg/l | A6 | | | |
| XX | PHOSPHATE - ORTHO | | mg/l | A7 | | | |
| YY | ENCLOSE SUMMARY OF OFF-SITE DISPOSAL OF NON-SEWERABLE LIQUID WASTES OR COPIES OF WASTE HAULERS REPORTS | | | | | | |

1/ Report all critical parameters required by the Sanitation Districts and any other critical parameter known to be present in the wastewater. These parameters required by the Districts but known to be absent from the wastewater may be reported by placing the word absent in the appropriate space. Test procedures must be in accordance with procedures contained in the current edition of STANDARD METHODS, if applicable.

2/ If values are obtained by measurements or analyses write A in this column. Analysis values must be determined, using representative 24-hour composite samples, by a State Certified or Districts Approved Laboratory. If values are obtained by estimate, write E in this column. Estimated values are acceptable for new plants only.

(PRINT) NAME AND ADDRESS OF LABORATORY PERFORMING ANALYSES AND FLOW MEASUREMENTS ______________

STATEMENT OF ACCURACY OF DATA

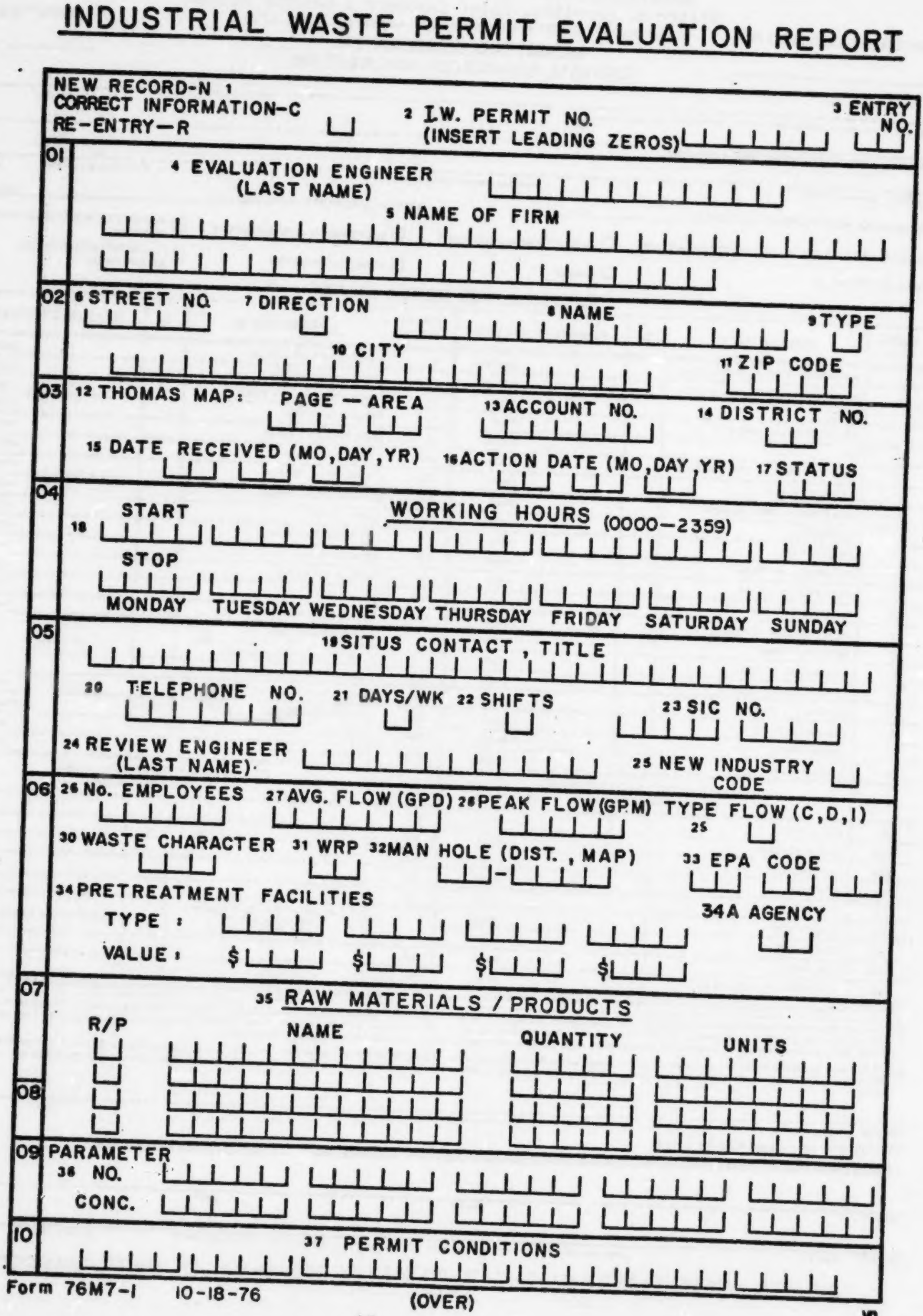
I hereby affirm that the above data comprise a true and correct representation of the wastewater discharged from the stated discharge point.

SIGNATURE ______________ DATE ______________ CITY ______________

(PRINT) NAME ______________ POSITION (ADMINISTRATIVE OFFICER OF COMPANY WITH WASTEWATER DISCHARGE) ______________ PHONE NO. ______________

THIS FORM MAY BE FOLDED AND STAPLED FOR USE AS A RETURN MAILER. SEE REVERSE SIDE.

FIGURE 2-18



## INDUSTRIAL WASTE PERMIT EVALUATION REPORT

1 NEW RECORD-N
CORRECT INFORMATION-C
RE-ENTRY—R

2 I.W. PERMIT NO.
(INSERT LEADING ZEROS)

3 ENTRY NO.

01
4 EVALUATION ENGINEER (LAST NAME)
5 NAME OF FIRM

02
6 STREET NO.
7 DIRECTION
8 NAME
9 TYPE
10 CITY
11 ZIP CODE

03
12 THOMAS MAP: PAGE — AREA
13 ACCOUNT NO.
14 DISTRICT NO.
15 DATE RECEIVED (MO, DAY, YR)
16 ACTION DATE (MO, DAY, YR)
17 STATUS

04
WORKING HOURS (0000–2359)
18 START
STOP
MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY SUNDAY

05
19 SITUS CONTACT, TITLE
20 TELEPHONE NO.
21 DAYS/WK
22 SHIFTS
23 SIC NO.
24 REVIEW ENGINEER (LAST NAME)
25 NEW INDUSTRY CODE

06
26 No. EMPLOYEES
27 AVG. FLOW (GPD)
28 PEAK FLOW (GPM)
25 TYPE FLOW (C, D, I)
30 WASTE CHARACTER
31 WRP
32 MAN HOLE (DIST., MAP)
33 EPA CODE
34 PRETREATMENT FACILITIES
TYPE :
VALUE : $ $ $ $
34A AGENCY

07
35 RAW MATERIALS / PRODUCTS
R/P
NAME
QUANTITY
UNITS

08

09
PARAMETER
36 NO.
CONC.

10
37 PERMIT CONDITIONS

Form 76M7-1 10-18-76 (OVER)

FIGURE 2-19

# INDUSTRIAL WASTE PERMIT EVALUATION REPORT

| | |
|---|---|
| 11 | 38 WASTE CHARACTERISTICS COMMENT |
| 12 | 39 GENERAL COMMENT |
| 13 | GENERAL COMMENT (CONTINUED) |
| 14 | 40 ADDITIONAL PERMIT REQUIREMENTS |
| 15 | ADDITIONAL PERMIT REQUIREMENTS (CONTINUED) |
| 16 | ADDITIONAL PERMIT REQUIREMENTS (CONTINUED) |
| 17 | ADDITIONAL PERMIT REQUIREMENTS (CONTINUED) |
| 18 | ADDITIONAL PERMIT REQUIREMENTS (CONTINUED) |
| 19 | ADDITIONAL PERMIT REQUIREMENTS (CONTINUED) |

vn

FIGURE 2-20

```
                      INDUSTRIAL WASTE DATA MANAGEMENT SYSTEM                         DATED 04/04/79      PAGE   33
            PERMIT FILE LISTING - BY COMPANY NAME,ADDRESS,PERMIT NUMBER                               REPORT NO. IWP020
 PERMIT RFV   PE_ENGR       COMPANY                                SITUS ADDRESS                                             PAGE,AREA  DIST
ACCOUNT  REC_DATF  ACT_DATE  STATUS  SITUS_CONTACT ..                      PHONE   DAYS MAINT SHIFTS SIC_NOS   NO_EMP  AVG_FLOW  PEAK_FLOW
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  1058 00  CURTISS         B&L ENTERPRISES                   12140 E 219 ST              HAWAIIAN GARDENS                    081,B4  19
1597786  01/21/74  01/25/74   APP                                   -   -    7  NONE    3     7542 3589       1          0-       20

  1905 00  CURTISS         B&W TILE COMPANY INC              14600 S WESTERN AVE         GARDENA                             063,E5  05
1601184  06/19/74  07/30/74   APP                                   -   -    5  NONE    2     3253           38     1038-        5

  5567 00  SMITH           B/W PHOTO UTILITIES                1346  E WALNUT AVE          PASADENA                     91106           16
1111376  05/10/77  05/19/77   APP BETTY JOHNSON-VICE PRESIDENT        796-611-9    6  NONE    3     3079           92        0-C'      0

  5918 01  FROGLIA         BAG SWISS MFG CO., INC             321      CORAL              EL SEGUNDO                   90245 062,D1    30
1815344  01/26/78  02/09/78   APP ALEX G GOODFELLOW                    322-660-6    5  NONE    1     3452 3471      23      613-I      0

  1183 00  KANEKUNI        PAILEY RUG - UPHOLSTERY CLEANERS   17916    BELLFLOWER BLVD    BELLFLOWER                   90706 066,C6    02
1355150  03/04/74  03/21/74   APP                                      -   -    3  NONE    1     7217 7211       2      575-       5

  811 00  CURTISS          BAKER COMMODITIES INC              4020    .BANDINI BLVD       VERNON                       90023 053,C2    02
1236913  10/24/73  04/01/74   APP                                      -   -    6  NONE    3     2077          204     166539-    100

  267 00  KANEKUNI         BAKER OIL TOOLS INC                7240     ADAMS ST           PARAMOUNT                    90723 065,E3    02
1594541  10/13/72  10/19/72   APP                                      -   -    5  NONE    1     7394 3999      70      345-       1

  3589 02  GLASNER         BAKER OIL TOOLS INC                7400   E SLUSON AVE         COMMERCE                           054,B5    02
1646905  03/15/76  06/13/78   VPP                                      -   -    7  1/MO    2     3479 3471     685     3463-       10

  864 02  GLASNER          BAKER PACKERS                      7400   E SLAUSON AVE        LOS ANGELES                  90040 054,A4    02
1312194  08/17/78  11/15/78   AAD WILLIAM ARIAS,SUPV.IND WASTE DEP 224-540-0    5  NONE    3     3533 3479     560     40474-C     30

  3587 01  GLASNER         BAKER PACKERS                      7400   E SLAUSON AVE        LOS ANGELES                  90040 054,A4    02
1312194  03/27/75  06/13/78   VPP                                      -   -    6  NONE    3     3533 3999     690     38676-      13

  5577 00  SNYDER          BAKER PACKERS                      7400   E SLAUSON AVE        LOS ANGELES                  90040 054,A4    02
1312194  05/17/77  05/18/77   APP S.M.MOHINDRA,SR.INDUSTRIAL ENGR. 724-540-0    6  NONE    1          3533       4      150-0      1

  4762 01  SNYDER          BAKER PACKERS DIV, BAKER INT'L     1500     COWLES ST          LONG BEACH                   90813           03
1611145  05/12/76  07/22/76   APP KENNETH F.BAZAR,DISTRICT MGR         633-180-6    6  SUN     1     5013 5013       4      100-I'     1

  5194 00  SMITH           BAKER SERVICE TOOLS                2778     GUNDRY AVE         SIGNAL HILL                  90806           29
1768363  11/03/76  11/23/76   APP JIM HULTGRIEN-DIST MANAGER           426-703-9    6  NONE    1     7394            7      100-C'     0

  4409 00  GLASNER         BAKER'S LAWN MOWERS                3316     SAN GABRIF BLVD    ROSEMEAD                           046,F1    15
1612214  11/20/75  11/25/75   APP                                      -   -    6  NONE    1     7699 3499       4      287-       5

  5606 00  GLASNER         BALDWIN CAR WASH                   9955     VALLEY BLVD        EL MONTE                     91731           15
1798425  06/06/77  06/13/77   APP ROBERT A MURAGA,MANAGER              575-141-4    7  NONE    1          7542      16      7749-C'    15

  6452 00  GLASNER         BALDWIN CAR WASH-ARAMAIS ZAKARIA   9955   E VALLEY BLVD        EL MONTE                     91731           15
1821555  12/05/78  03/12/79   APP ARAMAIS ZAKARIAN,OWNER               575-141-4    7  NONE    1          7542      10      7400-I'    15
```

flows, COD suspended solids, oil and grease, pH, and temperature at a frequency of once per year. A metal plater may, however, be required to analyze for many wastewater constituents at a frequency of four times per year, such as total and peak flow, COD , suspended solids, pH, cyanide, cadmium, chromium, copper, nickel, zinc, oil and grease, sulfide, ammonia, and others.

Industrial self-monitoring is also required for the Districts' surcharge program. For the "long form" surcharge program, currently required for about 500 companies, an annual reporting of the quantity and quality of the wastewater discharged is required. The surcharge program requires periodic measurements of total flow, peak flow, COD, and suspended solids at frequencies ranging from 2 to 52 times per year, depending upon the total yearly volume of wastewater flow. This industrial surcharge program has obtained a net revenue of close to $30 million in the last six years.

The industrial self-monitoring programs are effective in obtaining a significant amount of information at little cost to the Districts. The self-monitoring programs are also very effective in alerting company management to malfunctions in their plant which cause wastewater quality or quantity to exceed expected standards. Companies performing the required analyses for surcharge and permit requirements can periodically estimate their yearly surcharge payments and/or determine whether their company is in compliance with Districts' source control effluent limits. The Districts have found that self-monitoring equals self-correction for many industrial companies. A company finding its effluent in excess of an effluent limit will take corrective actions before such a violation is discovered by the Districts. Also, a company finding an excessively strong wastewater can make process corrections to avoid a high annual surcharge payment.

## Industrial Waste Monitoring

To insure that the self-monitoring information submitted by industrial companies is accurate, the Districts have two monitoring crews which periodically sample industrial companies for wastewater which is analyzed by the Districts' laboratory personnel. The crews have automatic samplers and automatic flow measurement equipment to permit measurement of wastewater flows, pollutant concentrations, and pollutant mass discharges. The automatic equipment is battery powered and can be left in unattended operation for up to three days.

Initially, the Districts' monitoring crews' efforts were concentrated on sampling the major companies for verification of industrial waste surcharge information. This information was used to audit the annual surcharge statement reports by these companies to determine if a correct surcharge was being paid. A few significant underpayments of industrial surcharges were discovered, but the great majority of companies were found to be paying correctly.

After July 1, 1975, a significant amount of effort of the monitoring crews has been spent on sampling for enforcement of the Districts' Phase 1 industrial source control program. Table 2-2 shows the effluent limits established by the Districts' Boards of Directors on July 1, 1975, which

TABLE 2-2

## SANITATION DISTRICTS OF LOS ANGELES COUNTY INDUSTRIAL WASTEWATER EFFLUENT LIMITATIONS FOR JOINT OUTFALL DISTRICTS

| Constituent | Industrial Wastewater Effluent Limitations Phase I Control Period (mg/l) |
|---|---|
| Arsenic | 3 |
| Cadmium | 15 |
| Chromium (Total) | 10 |
| Copper | 15 |
| Lead | 40 |
| Mercury | 2 |
| Nickel | 12 |
| Silver | 5 |
| Zinc | 25 |
| Cyanide (Total) | 10 |
| Total Identifiable Chlorinated Hydrocarbons | Essentially None |

began to be rigorously enforced after January 1, 1977. These Phase 1 regulations affect mainly companies in the metal finishing, circuit board fabrication, and similar industries. Currently close to 50 of such companies, out of a total of about 400, are under Districts' enforcement actions, requiring periodic wastewater monitoring by the monitoring crews.

The monitoring crews are also required to periodically obtain information to identify industrial companies causing treatment plant upsets. On occasion, one of the Districts' treatment plants may encounter a recurring upset problem caused by industrial wastes. The source of this problem is usually roughly located by an analysis of the wastewater entering the treatment plant and believed to have caused the upset condition. Any toxic wastewater constituent found in higher than normal concentrations is investigated as a possible cause of the upset. If the constituent found is unique to only a few companies, the monitoring crews may set up automatic samplers at these company locations. A company discharging excessive quantities of toxic materials is usually located and a correction obtained in this manner. If no small number of suspect companies is determinable, a more extensive wastewater monitoring program is required. In such a case, extensive sampling of the sewerage system is needed to progressively locate the geographical area from which the toxic pollutant is discharged and thereby locate the offending industrial discharger.

## Industrial Effluent Flow Meters

Any industrial discharger having a wastewater flow over 50,000 gallons per day or a peak wastewater flow over 100 gallons per minute is required to install a full-time effluent flow metering system. The system must indicate, totalize, and record wastewater flows. It must also provide a contact closure device for an automatic sampler to permit taking of samples, flow proportioned to various volumes of effluent flow. No specific type of flow meter is specified, but some meters are prohibited from being used where the industrial flow is unsuitable for that type of meter. For example, a propeller meter is unsuitable where any stringy material may be present in the effluent.

Periodic calibration of the flow metering systems is required. Systems with moving parts, such as propeller meters, are required to be calibrated more frequently (1 per 6 months) than systems such as Palmer-Bowlus flumes (1 per year), where no moving instrumentation parts exist. Full-flow calibration using a standard meter is periodically required, with instrumentation only calibrations required as indicated above. The calibration tests are required to be certified by an engineer registered in the State of California.

The industrial effluent meters are required mainly for determination of the correct industrial surcharge amount. About 300 companies are currently required to install and calibrate effluent flow meters. Considering that surcharge amounts, ranging from about $5,000 to $500,000 per year, with the average over $20,000 per year, are verified by these meters, the initial cost and upkeep are warranted. Severe problems were encountered in surcharge audits of large companies trying to relate water meter intake data to wastewater flows, by subtracting consumptive uses of water such as for irrigation, boilers, cooling towers, and incorporation in product. Companies were frequently found to overstate such losses, and such claims were difficult to refute. Large mainline water meters have also been found on numerous occasions to be out-of-calibration or broken, resulting in significant undermeasurement of water intake. Mass discharges of toxic materials can also be more accurately determined where accurate effluent flow metering data is available.

## Meeting General Pretreatment Regulatory Requirements

The Sanitation Districts believe that their industrial waste program fulfills Federally mandated pretreatment requirements. From the Districts' perspective, the conducting of a short-term industrial waste survey to identify and locate industrial users of the sewerage system and to characterize their wastes for quantity and quality is of dubious long-term value. Where little or no information on industrial users is available, such a survey may be necessary to gain rudimentary information. However, due to seasonal as well as yearly fluctuations in the number and nature of industrial companies as well as changes in the quantity and quality of wastes from each company, short-term survey results may be greatly misleading. Comprehensive information gathering programs, consisting of industrial waste permits, industrial self-monitoring, POTW monitoring, and on-site inspections of industrial facilities are needed to obtain consistent, reliable compliance with Federal pretreatment program regulations.

The Sanitation Districts believe that industrial pollution can most cost-effectively be controlled by the local sewerage agency which has a comprehensive industrial waste program like the Districts. The Districts will readily comply with the existing water quality standards for industrial pollutants, set by the State of California, for ocean discharges from the Districts' Joint Water Pollution Control Plant. Table 2-3 summarizes the current and predicted effluent quality.

The Districts' industrial waste program is based upon the regulation of industrial dischargers as required to meet water quality discharge standards for the Districts' treatment plants. Source control measures are required at industrial companies as needed but excessive, non cost-effective measures are not implemented. Since the Districts' wastewater treatment plants can reduce or remove most industrial pollutants to a significant degree, such pollutant removal has been considered in establishing industrial effluent limits.

The Sanitation Districts believe that establishing adequate water quality standards for the discharges from municipal treatment plants and requiring them to rigorously comply with such standards through proper regulation of industrial discharge will obtain the most adequate, cost-effective, and enforceable industrial pollution control program. POTWs will then establish industrial effluent standards adequate to meet their effluent requirements but would not establish cost intensive, excessive regulations which would not result in reduction of environmental pollution.

TABLE 2-3

## ACTUAL AND PROJECTED JWPCP EFFLUENT MASS EMISSION FLOWS

| Parameter | 1974 Effluent (pre source control, poor solids handling) | 1977 Effluent (some source control, fair solids handling) | Projected JWPCP Effluent | | | | | Revised California Ocean Plan Limit for 360 mgd Discharge and 100:1 Dilution Factor |
|---|---|---|---|---|---|---|---|---|
| | | | Advanced Primary | 2/3 Secondary | | Full Secondary | | |
| | | | Phase I Compliance | Phase I Compliance | Federal Pretreatment Compliance | Phase I Compliance | Federal Pretreatment Compliance | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | lbs/day | lbs/day | lbs/day | lbs/day | lbs/day | lbs/day | lbs/day | lbs/day |
| Arsenic | 87 | 25 | 17 | 13 | (1) | 10 | (1) | 1,525 |
| Cadmium | 94 | 66 | 50 | 29 | 48 (2) | 19 | 38 (2) | 910 |
| Chromium | 1,700 | 1,100 | 410 | 240 | 200 | 160 | 130 | 606 |
| Copper | 1,200 | 700 | 310 | 170 | 210 (2) | 90 | 130 (2) | 916 |
| Lead | 700 | 560 | 430 | 150 | 83 | 100 | 43 | 2,426 |
| Mercury | 3.3 | 3.1 | 2.1 | 1.2 | (1) | .7 | (1) | 24 |
| Nickel | 810 | 670 | 310 | 270 | 210 | 240 | 190 | 6,065 |
| Silver | 51 | 39 | 28 | 17 | 25 (2) | 11 | 18 (2) | 89 |
| Zinc | 4,300 | 2,600 | 1,100 | 710 | 400 | 520 | 280 | 3,663 |
| Cyanide | 1,300 | 650 | 250 | 110 | 48 | 47 | 32 | 1,516 |
| Phenols | 9,100 | 8,900 | 8,900 (3) | 3,000 (3) | (1) | 45 (3) | (1) | 9,097 |
| Ammonia-N | 106,000 | 107,000 | 93,000 (3) | 83,000 (3) | 74,000 | 79,000 (3) | 70,000 | 181,945 |
| TICH | 45 | 9.5 | 6.8 | 3.6 | (1) | 2.1 | (1) | 6.0 |

Notes: 1. No Federal Pretreatment Standard adopted or proposed as of this date.

2. Not known at this time how many companies now in compliance with Phase I are not in compliance with proposed Federal Ptreatment Standards. Data shown are worst case analysis.

3. No Phase I limit, assumes 1977 level of influent.

# CHAPTER 3

## SECURING ADEQUATE LEGAL AUTHORITY

## INTRODUCTION

The purpose of this chapter is to shed some light on the type of legal authority that POTWs need to achieve approval of their pretreatment programs. In order to accomplish this objective and secure adequate legal authority, POTWs must appreciate the legal requirements imposed on them by Congress and EPA; review their existing authority to determine whether modifications are needed to come into compliance; and decide on an enforcement method that provides them with maximum program control.

Complicating the legal authority issue is the fact that municipal wastewater treatment agencies comprise a multiplicity of legal structures, ranging from municipal corporations, special purpose service districts, county governments, or a combination of these. Each legal structure has differing laws affecting its existence, thus making it impossible to address each type of arrangement in detail without extensive research.

Since the specific question of legal authority can only be answered by an attorney familiar with the laws governing the specific organizational structure in question, the information in this chapter serves only as a general guide concerning adequate legal authority. Local legal involvement is critical early in the pretreatment program development process to ensure coordination between all parties necessary to comply with the Federal requirements.

## POTW LEGAL REQUIREMENTS

### Deadline for Program Approval

POTWs with a total design flow greater than 5 mgd and receiving pollutants from industrial users which pass through untreated or interfere with the operation of the POTW are required to develop a pretreatment program. This requirement only exists for POTWs with a total design flow of less than 5 mgd if the Regional EPA or State Division finds that the nature or volume of the industrial effluent, treatment process upsets, violation of POTW effluent limitations, contamination of municipal sludge, or other inconsistencies warrant in order to prevent interference with the POTW or pass through of untreated pollutants.

POTWs required to develop a pretreatment program must receive approval no later than three years after the reissuance or modification of their existing NPDES permits but in no case later than July 1, 1983. POTWs whose NPDES permits are modified under Section 301(h) of the Clean Water Act must have an approved pretreatment program within less than three years.

## The Role of the City Solicitor

The reason for contacting an attorney early in the local program development process is that a statement from the City Solicitor or a city official acting in a comparable capacity that the POTW has adequate authority to carry out the program is necessary prior to program approval. This statement must: 1) identify legal authority which provides the basis for each enumerated procedure in EPA regulations; 2) identify the manner for implementation of the pretreatment program; and 3) identify how the POTW intends to ensure compliance and enforce noncompliance by industrial users. These are three elements necessary to identify in an approvable pretreatment program. The City Solicitor will have to coordinate his involvement with the local agency because this program development step has to be a joint effort. No single actor in the process plan can stand alone.

## Legal Authority Necessary

To achieve pretreatment program approval under Federal requirements, a POTW must operate pursuant to legal authority, enforceable in Federal, State, or local courts, which authorizes or enforces the requirements of Sections 307(b) and (c) and 402(b) of the Act and any regulations implementing those sections. This authority may be contained in a statute, ordinance, or series of contracts or joint powers agreements which the POTW is authorized to enact, enter into, or implement and which are authorized by State law. At a minimum, this legal authority shall enable the POTW to:

- Deny or condition new or increased contributions of pollutants or changes in the nature of pollutants to the POTW by industrial users.
- Require compliance with applicable Pretreatment Standards and requirements by industrial users.
- Control, through permit, contract, order, or similar means the contribution to the POTW by each industrial user to ensure compliance with applicable Pretreatment Standards and Requirements.
- Require the development of a compliance schedule by each industrial user for the installation of technology required to meet applicable pretreatment standards and requirements and the submission of all notices and self-monitoring reports from industrial users as are necessary to assess and assure compliance by industrial users with Pretreatment Standards as well as reporting and other requirements.
- Carry out all inspection, surveillance and monitoring procedures necessary to determine, independent of information supplied by industrial users, compliance or noncompliance with applicable Pretreatment Standards and Requirements by industrial users. Representatives of the POTW must have the authority to enter any premises of any industrial user in which an effluent source or treatment system is located or in which records are required to be kept to assure compliance with Pretreatment Standards. This authority

must be at least as extensive as the authority provided under Section 308 of the Act.

- Obtain remedies for noncompliance by any industrial user with any Pretreatment Standard and Requirement. All POTWs shall be able to seek injunctive relief for noncompliance by industrial users with Pretreatment Standards and Requirements. In cases where State law has authorized the municipality or POTW to pass ordinances or other local legislation, the POTW must exercise such authorities in passing legislation to seek and assess civil or criminal penalties for noncompliance by industrial users with Pretreatment Standards and Requirements. POTWs without such authorities shall enter into contracts with industrial users to assure compliance by industrial users with Pretreatment Standards and Requirements. An adequate contract will provide for liquidated damages for violation of pretreatment standards and requirements and will include an agreement by the industrial user to submit to the remedy of specific performance for breach of contract.

- Utilize enforcement remedies that include but are not limited to the duty to allow or carry out inspections, entry, or monitoring activities; any rules, regulations, or orders issued by the POTW; or any reporting requirements imposed by the POTW or EPA regulations. POTWs must have authority and procedures (after informed notice to the discharger) immediately and effectively to halt or prevent any discharge of pollutants to the POTW which reasonably appears to present an imminent endangerment to the health or welfare of persons. POTWs must also have authority and procedures (which shall include notice to the affected industrial users and an opportunity to respond) to halt or prevent any discharge to the POTW which presents or may present an endangerment to the environment or which threatens to interfere with the operation of the POTW.

In addition to these specific regulatory requirements, the POTW may want to take advantage of the removal credit provisions of the regulations that allow the revision of categorical standards to reflect the POTW's removal of specific pollutants. If the local credit program is to be utilized by the POTW, there must be developed some legal method for committing the available credit and to provide by subsequent amendment for modifications based upon revised discharge limits for users. The regulations are extremely complex, and any agency considering this would have to work closely with industries to protect itself from possible suit for later withdrawal of removal credit authorization because of a decreased pollutant removal efficiency at the plant.

## STATE AND LOCAL LAW CONSIDERATIONS

As indicated earlier, it is extremely important to review the background of a municipal agency to determine where it derives its legal authority. To do this it is necessary to review the particular State constitution, State statutes, city or sewer district charters, and any ordinances or other legal documents relating to the authority of the municipal agency.

Keep in mind that the City Solicitor or comparable city official must submit a copy of any statutes, ordinances, regulations, contracts, agreements, or other authorities relied on by the POTW for its endorsement or approval of the local boards or bodies responsible for supervising and funding the POTW pretreatment program, if approved.

## State Constitution Review

Since POTWs, whether operated by cities, towns, or villages, or constituting a special purpose district, derive their authority from the State in which they are located, the first document a POTW should review is its State Constitution. The Constitution of the State of Missouri provides, for example, that "The people of the City of St. Louis and the people of the County of St. Louis shall have power to establish a metropolitan district or districts for the functional administration of services common to the area included therein...The power so given shall be exercised by the vote of the people of the City and County upon a plan prepared by a board of freeholders...." The Constitution further provides "if a majority of the qualified electors of the City voting thereon, and a majority of the qualified voters of the County voting thereon at the separate elections shall vote for the plan, then, at such time as shall be prescribed therein, the same shall become the organic law of the territory therein defined and shall take the place of and supersede all laws, charter provisions, and ordinances inconsistent therewith relating to said territory." The voters in St. Louis and St. Louis County were presented and adopted such a home-rule Plan or Charter giving the St. Louis MSD legal title to all public sanitary, storm, and combined sewers. This is very important to the subject of legal authority because if you own the system, it is a lot easier to control what is discharged into the system.

During the review of the State Constitution, the POTW should also check to be sure that it does not contain a reservation of power or authority. In this regard, the Tennessee Constitution has a provision restricting to fifty dollars the amount of a fine which can be imposed without a jury trial. Since all trial level courts in Tennessee are State courts, local government entities, including wastewater treatment agencies, are restricted to a maximum penalty of fifty dollars due to this jury provision.

## Local Charter Review

Following review of the State Constitution, the POTW should review its charter to determine whether it grants the POTW the power and authority needed for a pretreatment program. As a general proposition and subject to constitutional restrictions, the State legislature has complete control over the number, nature, and duration of the powers conferred on its municipalities and the territory over which these powers shall be exercised.

In some cases, the authority granted to a wastewater treatment agency can be quite extensive. This is the case with regard to the St. Louis MSD charter which grants the MSD Board of Trustees the authority to adopt ordinances, the violation of which is subject to a fine of up to $1,000 or imprisonment in the City workhouse or the County Jail for up to one year, or both such fine and imprisonment. This type of authority gives the POTW the necessary clout to regulate dischargers as opposed to the situation in Tennessee, where the maximum penalty a POTW can impose is a fifty dollar fine. In this type of situation, it is difficult to use ordinance violations as an enforcement tool with the result that the local agency has to resort to other, more costly legal remedies such as restraining orders and injunctions.

If the POTW charter does not grant the agency adequate pretreatment authority, an amendment to the charter may be necessary. In some states, municipalities may amend their own charters under authorizing statutes. The scope of such amendments depends upon the powers of the municipality and, of course, will vary with the interpretation of the organic law. And if an agency is faced with having to amend its charter where an amendment requires legislature or popular vote, the process can be time-consuming and immediate attention to the matter could be justified. Most amendment procedures are usually very complex and tricky as to when and what the final conclusion might authorize.

## MAXIMIZING POTW CONTROL OVER INDUSTRIAL DISCHARGES

Once the POTW determines that it has the power through the State Constitution and local charter to regulate industrial discharges, it must then develop the necessary ordinance or other authority to implement the pretreatment program at the local level. The authority to implement the program is necessary in order to regulate the industrial users which receive sewerage service. The POTW with the NPDES Permit and the Federal mandates must decide what type of program allows the maximum control of industrial dischargers for its situation. The ordinance or other authority must include in detail that procedure as to the method the agency selected to administer its pretreatment program.

### Developing Ordinance Authority

Most political subdivisions have ordinance authority, so it is logical to first explore this method for the legal authority to develop and enforce specific limits for the discharge pollutants subject to prohibitive standards as well as those subject to the national categorical standards setting process. The sewer use ordinance should include or incorporate these specific limits by reference and should also include any limits set out in the POTW's NPDES permit. As models, the reader is referred to the ordinances enacted by Chattanooga, Tennessee, and the East Bay Municipal Utility District in California which are reprinted in the Reader as Appendix A and B, respectively.

Although most POTWs can enact ordinances, it must be emphasized again that the amount of fine or penalty, civil as well as criminal, that the ordinance authorized the POTW to levy determines, in the final analysis, how much clout the ordinance will have. Some, such as those in Tennessee, are limited to a small fine for a violation with no jail term. Others, including St. Louis MSD, provide for both fines and a jail term. Very few, however, give POTWs the authority to levy large civil penalties such as the East Bay M.U.D. ordinance which authorizes the District to levy the sizeable civil penalty of $6,000 per day for a violation.

In addition to penalties for the violation of the ordinance, another strong tool for legal authority in a POTW's pretreatment program is a permit program for controlling industrial discharges. This approach, which gives an industrial user a privilege to discharge into the POTW, is flexible inasmuch as once a permit is violated subject to certain notice conditions, the POTW permittee could discontinue services independent of filing a legal action. A permit program also makes it procedurally easier for the POTW to modify limits and monitor compliance schedules.

When permits are issued to industrial users, they should contain information setting limitations on wastewater strength and should also contain provisions for self-monitoring so that the POTW's authorized representatives have the right of entry to monitor and inspect and the right to inspect records, including process and production records. They should also set limits on rate and time of discharge and any requirements for flow regulation and equalization. If the industry is under a Compliance Schedule, it should be a condition of the permit.

## Contract for Treatment

If a POTW is not authorized to enact an ordinance, then it must rely on contracts or joint powers agreements to secure the necessary legal authority for pretreatment program approval. If the POTW does not have control over the collector system within its service area, the contract with the collector system agency to provide trunk and treatment services to industrial users will require expansion to include additional language requiring the collector system to develop and implement its own pretreatment program. This system creates no privity of contract between the industrial user and the POTW. If a violation occurs, it requires the POTW to bring an action against the collector system and then the collector system will move against the industry. If the State or EPA entered the enforcement action, it would make for a complex situation. The control approach is burdensome on sampling and monitoring for compliance since the treatment agency control is subject to the will of the collecting system.

## Joint Powers Agreement

A joint powers agreement would allow both the treatment and collector system to possess equal power to regulate and control industrial dischargers. This method prevents a major duplication of efforts, materials, and costs. If both agencies possess the necessary powers, then in the absence of ordinance authority, this method appears to provide the most promise as a means of realistically administering a pretreatment program. Privity would exist between all parties, with the result that there would be less likelihood of a procedural error or delay in bringing a necessary enforcement action.

## Contract for Discharge

Under the terms of a contract for discharge, the legal authority for the program could come directly from the industrial discharger under a separate service contract. This authority would be a binding contract to provide service conditioned upon the industrial users' promise to comply with the pretreatment program and pay charges. This contract would be enforceable upon the parties if signed in writing by the parties to be charged. The industrial discharge contract would be needed for obligating the local credit if they were approved with the pretreatment program.

### The Case for Ordinance and Permit Authority

Contracts can be an effective control method provided the POTW can get all the same requirements in the contracts that are required in the previous discussion on ordinances and permits. However, the main problem with contracts is that they require agreement on both sides, which is sometimes difficult and, in some cases, impossible to secure. Nonetheless, if a POTW is currently operating with contract authority and believes that it is not feasible to switch to ordinances and permit controls, renegotiated contracts should be made as flexible as possible and incorporate both NPDES requirements as well as existing and anticipated Federal requirements.

The problems with contracts apply doubly to joint powers agreements. If you can get strong terms in them--as strong as those in the Chattanooga and East Bay M.U.D. ordinances--and get them signed, they will work fine. But, as controversial as the pretreatment regulations can be, it will be most difficult to negotiate a joint powers agreement with teeth.

Contracts and joint powers agreements can get the job done, but unless you can contract with each non-residential discharger, POTWs should anticipate problems. These problems could probably be resolved with new State legislation giving the POTW permit authority or some other way to allow direct regulation. State legislatures might even look favorably on this since they should understand the POTW is in the middle and can be penalized because of a discharge that is almost impossible to control. For most POTWs, it will be necessary to obtain additional authority from new State legislation.

## ENFORCEMENT

As the pretreatment program progresses, it will be necessary to initiate enforcement actions against industrial dischargers. The key words involved in evaluating adequate legal authority are implementation and enforcement. A POTW's approved program must be implementable.

What must the POTW do if the industrial user does not comply? The enforcement aspect of the pretreatment program requires that the POTW have the authority to enter the property of the industrial user. The monitoring and surveillance activity must provide latitude to collect samples as these samples will become the justification for enforcement action.

The sampling for compliance should be conducted by qualified personnel trained as to proper handling and standard analysis procedures. The pretreatment program should provide for agency procedures concerning the custody of samples to ensure the evidence is properly preserved. If strict evidentiary procedures are not followed, the chances of a successful enforcement action are poor.

In addition to getting and preserving evidence relative to a violation, the POTW should appreciate that the actual filing of a suit to force an industrial user to come into compliance is a slow and costly proceeding. Liquidated damages, specific performance, restraining orders, and injunctions are all desirable forms of legal redress but to get the type of results needed to protect the POTW, other alternatives should be developed to allow the agency to act promptly when the situation arises.

Authority to discontinue treatment services is one such alternative. Not only does it get immediate results, it also allows the POTW to control the action. A treatment service cut-off provision is one element a pretreatment program needs if local agencies are to have results.

## SUMMARY

Since POTW legal authority varies from state to state and depends on its organizational structure as well, the information set forth in this chapter has been general in nature. Rather than answer specific legal questions, it is designed to stimulate consideration and discussion of various pretreatment enforcement approaches with a view towards ensuring maximum POTW control of industrial discharges in conformance with Federal regulatory requirements.

As a first effort towards securing adequate legal authority for pretreatment purposes, local agencies should address the following questions:

- Does the agency presently have the needed legal authority required for an EPA pretreatment program?
- Does the agency need to propose State legislation?
- Does the agency need to propose local legislation?
- Does the agency need to obtain local legal authority?
- Does the agency want a permit or contract program?
- Does the agency need to modify its existing contract?
- Does the agency want to apply for local credits?

All of these questons should be reviewed with the local agency's counsel, keeping in mind that the ultimate enforcement responsibility will rest with the local agency. More important, this legal review should be conducted early enough in the local program development process to ensure sufficient time for necessary State or local authority revisions to achieve program approval in a timely fashion.

# CHAPTER 4

## SETTING LOCAL STANDARDS

### INTRODUCTION

The local standard setting process is an integral part of local pretreatment program development and implementation. It includes the identification of current POTW operating problems resulting from the discharge of industrial wastes; the determination of the level of control necessary to address these problems; the integration of State and Federal prohibitions and categorical standards as a means of control, including the applicability of removal credits; and the establishment of procedures through ordinances or otherwise to insure compliance with required standards by industrial users.

The key to accomplishing these objectives and setting local standards is data acquisition. Data may be required to demonstrate adverse effects, threatened impacts, and toxic pollutant levels to convince the public, governing bodies, and dischargers that a pretreatment or source control program is required and will provide benefits. More important, if industrial users subject to regulation understand that a reasonable data base has been established, that the regulation level is necessary to meet objectives, and that it is to be implemented in a sound and fair manner, there will be less resistence and, perhaps, general acceptance of the approach.

Because of varying local conditions and the current unavailability of over 90% of the Federal categorical standards, this chapter does not set forth a general approach to the setting of local standards. Instead, it relates the difficulties encountered and process utilized by two local agencies in developing standards for their respective communities. Further, since the removal credit provisions are of great interest to industrial users inasmuch as they may mitigate the impact of pretreatment requirements, a POTW's experience with the removal credit procedures is presented.

### THE HAMPTON ROADS APPROACH

#### Introduction

The Hampton Roads Sanitation District is a political subdivision of the Commonwealth of Virginia charged with the responsibility of water pollution abatement within its jurisdiction. The District's boundaries currently encompass approximately 2,000 square miles of Southeastern Virginia known as Tidewater. This area includes the cities of Norfolk, Chesapeake, Hampton, Virginia Beach, Portsmouth, Newport News, Poquoson, Williamsburg, Suffolk, and the counties of James City, York, and Isle of Wight.

The Hampton Roads Sanitation District is unique in that it serves an area surrounding Hampton Roads which is the largest natural harbor in the world. It is estimated that nearly all the ships of the world could be in Hampton Roads at one time and not fill it. This enormous harbor, surrounded by the Chesapeake Bay and large river systems, lends itself to be ranked as the third busiest harbor in the United States in terms of merchant shipping and is the home of the U.S. Navy Atlantic Fleet and world's largest Naval Base. Also located within Hampton Roads are ten ship building and repair yards which include the largest governmental shipyard in the United States and the largest privately owned shipyard in the world. Much of the nation's space program is being developed at the NASA Research Center in Hampton, Virginia. In addition, Virginia Beach, Virginia, the world's largest resort city, is located along the shores of the Atlantic Ocean and the Chesapeake Bay. The City of Williamsburg is a world famous tourist area and is also the home of what will soon be the second largest Anheuser-Busch Brewery and Busch Gardens.

Wastes generated by these widely varied industrial and commercial waste sources are treated at the District's nine primary and secondary treatment plants which receive flows of approximately 130 million gallons per day (MGD).

HRSD's Industrial Waste Division is responsible for regulating industrial and commercial discharges through application of the District's Industrial Wastewater Discharge Regulations. These regulations include general and specific effluent limitations and a discharge permit program. Compliance is assured using wastewater monitoring surveys in conjunction with unannounced spot checks and grab sampling. Monitoring surveys are done using highspeed automatic samplers interfaced with dipper-type flow meters and portable Palmer-Bolus flumes.

## HRSD Industrial Wastewater Discharge Regulations

Prior to November 1978 it was HRSD policy to issue effluent limitations to industrial dischargers on a case by case basis, taking into consideration the nature and impact of the wastes on the treatment plant. As investigation and continued wastewater monitoring revealed more and more sources of toxic wastes, issuance of limits became increasingly difficult. In addition, as HRSD treatment processes became more complex due to more restrictive NPDES effluent limitations, treatment plant upsets from industrial wastes increased in frequency.

It was evident that a uniform set of specific limitations for major contributing industrial dischargers, as well as a set of general guidelines for all industrial and commercial users, was essential. Although EPA limits for industrial subcategories were not finalized, HRSD generally incorporated EPA's "General Pretreatment Regulations for Existing and New Sources of Pollution" (40 CFR 128) into its Industrial Wastewater Discharge Regulations.

In accordance with existing law, HRSD also incorporated Parts 116-119 of Hazardous Substances (Section 311 of the Clean Water Act) into the Industrial Wastewater Discharge Regulations. Soon thereafter, Parts 117 and 118 were held invalid (Manufacturing Chemist Association vs. EPA).

Although Hazardous Substances (Parts 117-119) have been revoked, and Part 117 is being rewritten, it appears that the POTW, through its NPDES permit, may still be subject to Section 311 of the Clean Water Act. HRSD believes that POTW operators should become familiar with the Hazardous Substances provisions and inform industrial customers of their implications.

HRSD recommends that POTWs incorporate two important ingredients into the development of discharge regulations or ordinances. First and foremost is guidance from legal counsel throughout the process. This is important from the standpoint of future enforcement and is a requirement under the EPA General Pretreatment Guidelines. Second, and equally as important as legal counsel, is industrial and public participation in the development process. This public participation is also a requirement of the General Pretreatment Guidelines. HRSD solicited written comments from approximately 100 members of the industrial community, local jurisdictions, planning districts, industrial development authorities, and appropriate State and Federal regulatory agencies. The comments received proved invaluable during the development process and greatly impacted the final regulations.

During the development of HRSD's specific pollutant limitations, two key factors were taken into consideration. The first factor considered was protection of HRSD treatment structures and processes. HRSD scientists carefully reviewed proposed limits, particularly for heavy metals, for their effect on the quality of sludges generated by the District taking into account ultimate disposal. Although incineration is now the principal method of sludge disposal used by the District, land application is planned to replace incineration in the future. Additionally, effects of the proposed limits were examined for various processes including activated sludge and anaerobic digestion using data where possible. Literature values were employed only as a last resort. Effects of incompatible pollutant discharges to receiving waters from HRSD treatment facilities were also studied to assure that EPA Water Quality Criteria and Virginia State Water Control Board Non-Toxic Criteria were met.

The second factor considered was compatibility with EPA pretreatment limitations. Local standards less stringent than EPA limits may result in construction of inadequate pretreatment facilities and wasted capital investments since EPA limits must be enforced when promulgated. Conversely, local standards more stringent than EPA limits which are not based on specific treatment objectives such as land disposal of sludges may result in wasted energy and duplication of treatment. HRSD's toxic pollutant limitations and EPA's proposed "Electroplating Guidelines" are presented for comparison as Tables 4-1 and 4-2, respectively. It was HRSD's intent to develop and enforce local standards compatible with EPA "final" limits. HRSD believes that pretreatment systems designed and built to meet its limits could be the foundation for whatever system may be necessary to meet EPA limits; e.g., addition of polishing filters to an existing chemical precipitation system for heavy metals removal.

One problem has already surfaced concerning the compatibility of HRSD and EPA limits. EPA maintains that source control is the answer. Yet, in some cases, this will result in useless pretreatment, duplication of effort, wasted energy, and needless capital investment. An example is the plight of the U.S. Navy which operates a pretreatment plant for

TABLE 4-1

## HRSD INDUSTRIAL EFFLUENT LIMITATIONS

| CONSTITUENT | CALENDAR MO. AVERAGE* (mg/l) | CALENDAR DAY MAXIMUM** (mg/l) |
|---|---|---|
| Arsenic | 0.1 | 0.1 |
| Boron | 1.0 | 1.0 |
| Cadmium | 0.1 | 0.1 |
| Chromium, Total | 2.0 | 5.0 |
| Copper | 2.0 | 5.0 |
| Cyanide | 0.5 | 1.0 |
| Lead | 1.0 | 2.0 |
| Mercury | 0.01 | 0.02 |
| Nickel | 1.0 | 2.0 |
| Phenolic Compounds | 1.0 | 2.0 |
| Silver | 0.25 | 0.5 |
| Zinc | 2.0 | 5.0 |
| Oil & Grease (Non-Saponifiable) | 100 | 100 |
| pH | 6.0-9.0 pH units | 6.0-9.0 pH units |

* Average of any number of daily values obtained during a calendar month.

** Maximum for any sample obtained during any calendar day.

## TABLE 4-2

## EPA PROPOSED ELECTROPLATING LIMITATIONS

| Pollutant or Pollutant Property | Pretreatment Standard (mg/l) | |
|---|---|---|
| | Maximum for any 1 day | Average of daily values for 30 Consecutive days shall not exceed - |
| CN, A............ | 0.20 | 0.08 |
| CN, T............ | 0.64 | 0.24 |
| Cr, VI........... | 0.25 | 0.09 |
| Cu .............. | 4.60 | 2.00 |
| Ni .............. | 3.60 | 1.80 |
| Cr, Total........ | 4.20 | 1.60 |
| Zn .............. | 3.40 | 1.50 |
| Pb .............. | 0.80 | 0.40 |
| Cd .............. | 1.00 | 0.50 |
| Total metals*.... | 7.50 | 3.90 |

* Total Metals = Copper (Cu), Nickel (Ni), Total Chromium (Cr) and Zinc (Zn

a mixed waste stream at the Naval Air Rework Facility. Portions of these wastes are from several of the 21 industrial subcategories to be regulated by EPA. Among these is the electroplating category which already has final limits that electroplaters must meet by October 1982.

Although EPA has addressed the problem of adjusting categorical pretreatment standards in a mixed waste stream, there is no guidance for calculating adjusted standards for a single pollutant present in a mixed waste stream where pollutant limits have not been established for all the individual streams. In addition, the procedures for obtaining a variance to Reflect POTW Removal of Pollutants may be, in many cases, impractical or impossible.

It is HRSD's contention that applying its effluent limitations at the mixed waste stream pretreatment plant is sufficient for POTW protection. Preliminary indications from EPA suggest, however, that the limits must be applied at the individual sources. HRSD is currently working to find a reasonable solution to this problem.

## Complementing National Standards

The EPA General Pretreatment Guidelines offer provisions for obtaining variance from promulgated industrial effluent limitations. These provisions state that an industrial user of a POTW or other interested person may apply for an adjustment either more or less stringent than the promulgated limits.

Variances for less stringent limitations may be obtained for fundamentally different factors or for revisions to reflect POTW removal of pollutants. The requirements to obtain less stringent variances in each of these cases is very rigorous and expensive. In fact, HRSD believes that the financial burden necessary to prove the need for less stringent limitations may overshadow any economic benefit gained by obtaining them.

According to the General Pretreatment Guidelines, variance for limitations more stringent than categorical standards may be applied for by either industry or the POTW. It is highly unlikely that an industrial user would apply for a variance more stringent than the categorical pretreatment standards. According to the regulations, the POTW must have an approved industrial waste control program before applying for more stringent limitations. HRSD believes that a POTW's ability to determine its need for more stringent limits is implied in the EPA approval of the local program. Accordingly, from HRSD's perspective, subsequent application to EPA for variances for more stringent limitations serves no useful purpose. For example, HRSD's cadmium limitation of 0.1 mg/l for major contributing industries (flow ≥ 50,000 GPD), is ten times more stringent than the proposed EPA electroplating subcategory limitation. This rigorous limitation is based on the need to provide a high quality sludge for land application. The EPA land application limit for cadmium is 25 mg/kg. Using the sludge generation rates at HRSD's treatment facilities and assuming 50% capture rate of cadmium passing through the treatment facility, the cadmium effluent limitation is necessary to achieve the land application limit. This confirms the need to carefully evaluate the pretreatment limitations rather than haphazardly applying them regardless of prevailing circumstances.

## Relationship of Pollutant Removal with Respect to POTW Tolerance and Design

Local Treatment Authorities must recognize the role that POTW pollutant removal and tolerance can play in meeting EPA pretreatment and NPDES limits. In certain instances, POTW redesign and upgrade can supplant industrial pretreatment. A case in point concerns the existing wastewater treatment facilities in Williamsburg, Virginia, which were built in 1971 by HRSD to serve the greater Williamsburg, Virginia, area and the Anheuser-Busch Brewery. In 1977, Anheuser-Busch notified HRSD of its plans to substantially expand the capacity of the existing brewery. The proposed expansion would result in a more than two-fold increase in both the average daily wastewater flow and daily $BOD_5$ loading to the HRSD plant. This increase would substantially overload the plant and result in HRSD's inability to meet NPDES effluent limitations. HRSD contracted Montgomery Engineers to perform a study to determine the most cost-effective method for accommodating the brewery expansion and future growth and development in the service area. Major alternatives considered were brewery pretreatment and treatment plant upgrading. The results of the study showed conclusively that POTW upgrading was more advantageous than brewery pretreatment, both for HRSD and Anheuser-Busch. In 1978, negotiations with the brewery were consummated and work is currectly underway to expand and upgrade the HRSD facility. This again reaffirms the need for owners of POTWs and members of the industrial community to work together relative to pretreatment decisions. There will be cases where it is neither in the industry's nor the POTW's best interest to pretreat.

## Conclusion

It is imperative that industrial waste control be provided for successful POTW operations. This control is most effective when properly administered by the local treatment authority. It is important that appropriate Federal and State regulatory agencies provide the basic guidance for industrial waste control at the local level. This guidance, however, must be tempered with flexibility to encourage appropriate local standards so that the best and most cost-effective waste treatment services may be provided to all users of the POTW.

## THE MILWAUKEE MSD APPROACH

## Introduction

The Milwaukee Metropolitan Sewerage District (MMSD) is substantially affected by the concern over potentially toxic materials. The greatest effect is in the area of solids management. The recycle/reuse concept has served as the basis for the District's solids management policies since its inception. In the 1920's the MMSD's first treatment plant, the Jones Island Plant, was constructed and placed into operation. The excess biological solids were heat dried (Milorganite) and sold to a national market. The excess solids from the MMSD's second treatment plant, the South Shore Plant, are digested and applied to agricultural fields.

The many concerns that were and are raised about the contamination of land by the application of sewage solids are presently being addressed by the MMSD. To date, a great deal of effort has been expended on the heavy metal issue. In order to address and manage the heavy metal problems, MMSD believes it is necessary to 1) ascertain the sources, 2) assess the treatment plant's ability to remove them from the influent wastewater and 3) inventory their ultimate disposal.

## Source Determination

Since all waste waters contain some heavy metals, the relative metal concentrations are generally a reflection of the proportion of domestic to industrial discharges that the treatment facility receives. The exact concentration levels depend on the contributions from three general sources:

- Residential/domestic/background.
- Miscellaneous nonpoint sources including infiltration/inflow, stormwater runoff, and chemicals added at the treatment plant.
- Industrial process wastes.

The generalization that industries are the "major" sources of heavy metals in wastewater cannot be readily confirmed. Recent studies conducted in New York, Chicago, and Milwaukee all indicate substantial metal contribution from miscellaneous and/or domestic sources. For too long the heavy metal issue has been thought of as an industrial problem rather than as the community problem, which it is.

The MMSD has embarked on a program to find the sources of metals reaching its treatment plants. The preliminary results of this activity can be seen in Figure 4-1. While these results are far from conclusive, they do provide a basis with which to project future metal loadings both with and without industrial pretreatment.

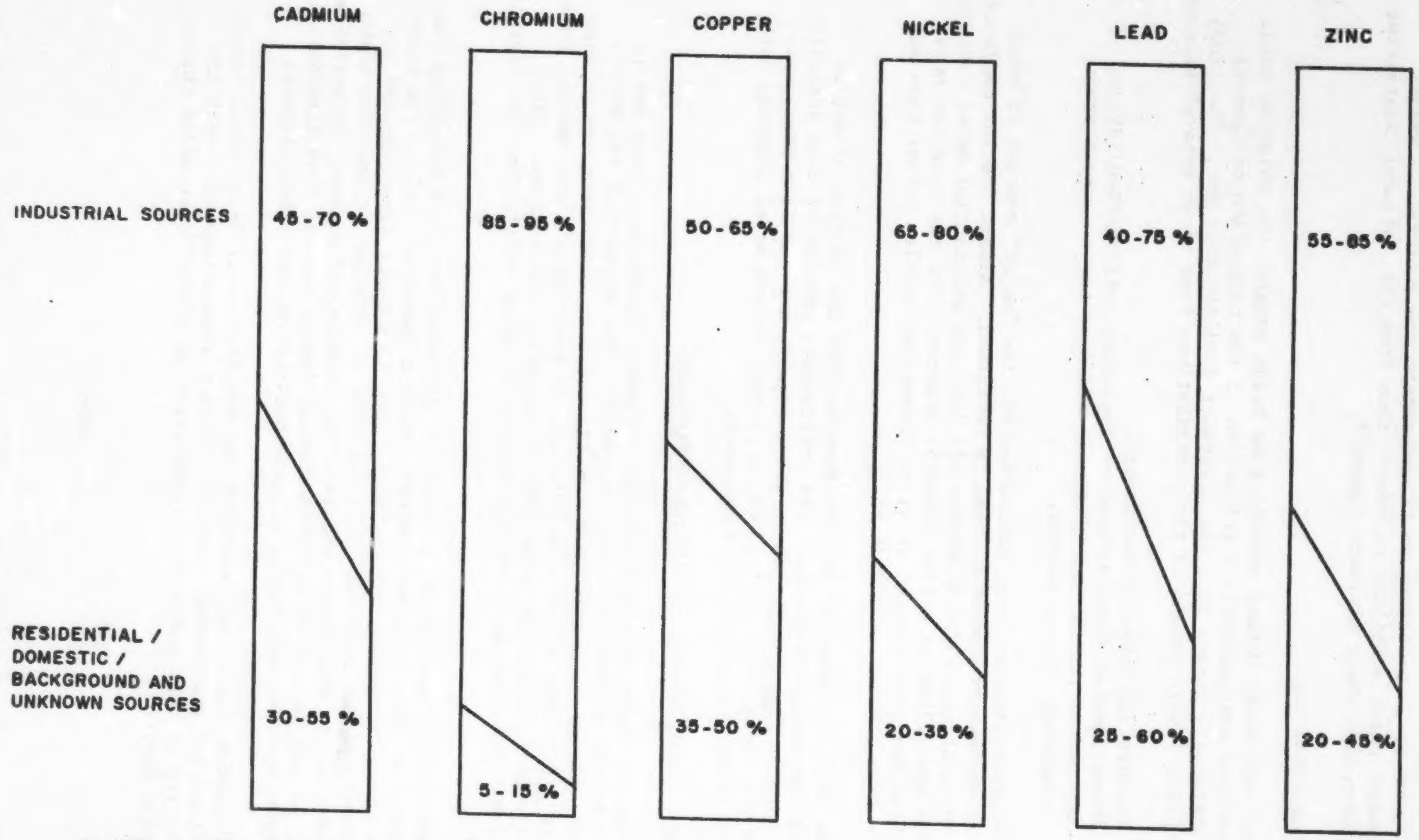
## Treatment Plant Removal and Ultimate Disposal

Once the heavy metals reach the treatment facilities, they are to a great extent removed from the wastewater. The ability of the MMSD's treatment plants to remove them from the influent wastewater can be seen in Table 4-3. Once all or a portion of the heavy metals are removed from the wastewater, their ultimate disposition must also be known. Table 4-4 illustrates this ultimate disposition of heavy metals from the District's plants.

Very little conclusive information has been developed detailing the wastewater solids, land application, human consumption cycle. The heavy metals are to a varying degree assimilated into plant structure and may be transmitted via ingestion. In the case of cadmium, it has been shown to accumulate in the kidney and liver of animals and humans. In sufficient quantity, cadmium can cause renal tubular damage and has been associated with hypertension, emphysema, chronic bronchitis, and other diseases.

Concerns also exist regarding the possibility of heavy metal runoff to surface and groundwater sources. Direct animal ingestion with the possibility of meat and milk contamination is viewed as an added threat to public health.

FIGURE 4-1



SOURCES: 1. PLANT OPERATIONAL DATA SHEETS FOR JONES ISLAND AND SOUTH SHORE.
2. W. ST. JOHN, "WASTE LOADINGS FROM A TYPICAL RESIDENTIAL DISCHARGE IN THE MILWAUKEE METROPOLITAN AREA," 1977.

METROPOLITAN SEWERAGE DISTRICT OF THE COUNTY OF MILWAUKEE

1975–1977 RELATIVE PERCENT OF HEAVY METALS SOURCES

## TABLE 4-3

## HEAVY METALS REMOVAL EFFICIENCIES IN THE ACTIVATED SLUDGE PROCESS

| METAL | Removal Efficiency (percent) 1975 | 1976 | 1977 | 1978 |
|---|---|---|---|---|
| **Jones Island** | | | | |
| Cadmium | 67.0 | 72.0 | 84.1 | 83.3 |
| Chromium | 81.2 | 84.5 | 88.8 | 89.2 |
| Copper | 44.8 | 46.8 | 81.1 | 70.3 |
| Lead | 67.0 | 64.5 | 75.4 | 74.8 |
| Nickel | 24.3 | 35.3 | 33.9 | 28.3 |
| Zinc | 59.8 | 61.4 | 71.4 | 80.2 |
| **South Shore** | | | | |
| Cadmium | 35.7 | 67.7 | 65.8 | 41.7 |
| Chromium | 73.9 | 84.2 | 87.9 | 72.1 |
| Copper | 45.6 | 60.7 | 82.4 | 84.2 |
| Lead | 65.3 | 71.8 | 70.0 | 62.5 |
| Nickel | 49.9 | 58.4 | 62.0 | 51.5 |
| Zinc | 42.7 | 67.5 | 77.6 | 59.8 |

## TABLE 4-4

### HEAVY METALS QUANTITIES AT JONES ISLAND AND SOUTH SHORE

| | | JONES ISLAND | | | | SOUTH SHORE | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Average Pounds Per Day | | | | Average Pounds Per Day | | | |
| Metal | Year | Influent[1] | Effluent | Solids | Avg mg/kg in Solids[3] | Influent | Effluent | Solids[2] | Avg mg/kg in Solids[3] |
| Cadmium - | 1975 | 53.9 | 17.8 | 36.1 | 94 | 21.0 | 13.5 | 7.5 | 55 |
| | 1976 | 57.9 | 16.2 | 41.7 | 97 | 12.7 | 4.1 | 8.6 | 66 |
| | 1977 | 60.0 | 10.0 | 50.0 | 119 | 12.0 | 4.1 | 7.9 | 60 |
| | 1978 | 44.1 | 10.3 | 33.8 | 88 | 8.1 | 4.6 | 3.5 | 49 |
| Chromium - | 1975 | 3450 | 650 | 2800 | 7250 | 2180 | 580 | 1610 | 11,800 |
| | 1976 | 2970 | 460 | 2510 | 5860 | 1650 | 270 | 1390 | 10,700 |
| | 1977 | 2349 | 227 | 2122 | 5469 | 1320 | 170 | 1160 | 8,800 |
| | 1978 | 2790 | 290 | 2500 | 6754 | 1822 | 509 | 1323 | 11,270 |
| Copper - | 1975 | 212 | 117 | 95 | 246 | 386 | 210 | 176 | 1,300 |
| | 1976 | 280 | 149 | 131 | 306 | 298 | 117 | 181 | 1,400 |
| | 1977 | 201 | 36 | 165 | 423 | 510 | 90 | 420 | 3,200 |
| | 1978 | 220 | 70 | 150 | 413 | 420 | 66 | 354 | 1,060 |
| Nickel | 1975 | 169 | 128 | 41 | 106 | 355 | 180 | 177 | 1,300 |
| | 1976 | 167 | 108 | 59 | 138 | 262 | 111 | 153 | 1,180 |
| | 1977 | 119 | 76 | 43 | 90 | 287 | 110 | 178 | 1,350 |
| | 1978 | 120 | 90 | 30 | 81 | 221 | 107 | 115 | 447 |
| Lead - | 1975 | 397 | 131 | 266 | 690 | 173 | 60 | 113 | 830 |
| | 1976 | 344 | 122 | 222 | 520 | 142 | 40 | 102 | 780 |
| | 1977 | 224 | 55 | 169 | 435 | 100 | 30 | 70 | 530 |
| | 1978 | 300 | 80 | 220 | 596 | 115 | 40 | 75 | 569 |
| Zinc - | 1975 | 820 | 330 | 490 | 1270 | 1170 | 700 | 500 | 3680 |
| | 1976 | 570 | 220 | 350 | 820 | 800 | 320 | 540 | 4150 |
| | 1977 | 553 | 139 | 414 | 1068 | 490 | 150 | 380 | 2880 |
| | 1978 | 620 | 170 | 450 | 1197 | 560 | 225 | 370 | 3880 |

[1] Jones Island influent adjusted for estimated recycled metals.

[2] South Shore solids adjusted for estimated pickle liquor metals.

[3] 1975-1977 data based on computations utilizing average TPD solids. 1978 data based on actual annual laboratory analysis.

/kpc

Environmental groups such as the Citizens for a Better Environment have claimed that "the present level of cadmium in the human diet is already high enough to result in kidney damage." Their position, however, stops short of defining what level of contamination would constitute a possible hazard. They cite a perceived lack of control over application rates, soil types, soil pH, and crop types associated with application areas as reason for recommending "no disposition" of solids containing cadmium to the environment.

The concentration of cadmium in Milorganite generally ranges from 80 to 140 mg/kg. This fact, combined with Milorganite's historically large "home-use" market, has raised questions concerning its use as a garden fertilizer. Guarantees that the homeowner will follow bag recommendations are non-existent. Overapplication and diversion to unauthorized sites is viewed as inevitable, either through a lack of understanding of application rates (3 to 5 pounds per 100 square feet) or due to inadequate means of physically spreading to these requirements.

Lagoon solids, agriculturally spread from the District's South Shore Plant, have an average cadmium concentration of 40 ppm. Concern in this area, besides plant uptake and runoff, includes drinking water contamination via pollution of ground and surface waters.

In addition to heavy metals, there is much controversy associated with the possible presence of PCBs in the solids. Similar to cadmium, the environmentalists worry that PCBs will contaminate the drinking water and be absorbed by food crops. Although little research has been done on organic chemicals, plant uptake does not seem to pose a significant health risk to humans. The greatest risk appears to be associated with chemicals in the fat and milk of animals grazing on forages grown in sludge amended soils. Again, the cause of anticipated problems seems to be directed to mismanagement of solids distribution and/or application.

The EPA has provided no firm guidance on the application of sewage sludge or its byproducts. Table 4-5 presents several regulations and guidelines, at both the Federal and State level, which have been or are being promulgated and do or can have a significant effect on the District's operations and the resultant wastewater solids removed. These regulations and guidelines are presented in summary form, including major emphasis/requirements, impacts on District Solids Management, and potential District actions.

It is the uncertainty of the content and timing of these regulations which will most affect the District programs. It is the non-uniformity of existing regulations which continually cloud the contaminant issue. Even though the FDA suggests a limit of 20 ppm cadmium content of sludges applied to agricultural land, other sources endorse limits up to 50 ppm.

Where management guidelines have been supplied, conformance to these requirements has proven attainable. As specified in the Wisconsin Department of Natural Resources Technical Bulletin No. 88, limitations on cadmium additions to a site are easily calculated and limited to two lbs./acres/year.

## TABLE 4-5

### FEDERAL AND STATE REGULATIONS AND GUIDELINES[1]

| Regulation/Guideline | Major Emphasis/Requirements | Major Impacts on District Solids Management | Potential District Actions |
|---|---|---|---|
| Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) | Requires development of pretreatment guidelines and standards to provide uniform approach to control of industrial pollutants. | Many pollutants now being accepted into the system may eventually be classified as incompatible with publicly owned treatment works. | Evaluate aspects of establishing, operating, enforcing pretreatment standards. |
| | Guidelines - recommend approaches to developing pretreatment policy and standards. | May require establishment of pretreatment standards for some or all of dischargers to the system. | May require subsequent undertaking of a full pretreatment standards program. |
| | Standards - establishing classes of wastes prohibited from discharging to publicly owned treatment works. Establishes minimum acceptable discharges of other pollutants. | WPDES permit may require establishment of pretreatment standards in future. | |
| Federal, Resource Conservation and Recovery Act of 1976 (PL 94-580) | Controls established for management of hazardous wastes. | May require establishment of pretreatment standards and controls to permit continued use of solids on land. | Take all actions required to ensure that wastewater solids are non-hazardous. |
| | Classifies solids from wastewater treatment facilities as solid wastes. | Use of solids for land application may be limited (by application rates, number of applications, and/or land area required) if stringent contaminant concentration and/or quantity guidelines are adopted. | Undertake to reduce present metals quantities. |
| | Further classification as to hazardous, stabilized, toxic, etc. to be promulgated. | | Take actions to ensure metals quantities are not permitted to increase. |
| | Threshold limits for hazardous materials to be promulgated. | Potential for loss of Milorganite, land application, and composting as solids management methods if regulations are overly stringent. | May require point-source control; sidestream treatment; MSD hazardous waste receiving/treating/disposing facility; wastewater treatment plant process modifications. |
| | | Probable subsequent increase in costs for allowable disposal methods. | |
| Federal, Toxic Substances Control Act of 1976 (PL 94-469) | Requires all manufacturers/users of chemicals/chemical constituents to list each constituent. | Unknown, presently appears to be no impacts. | Presently, appears to be no required or potential District actions. |
| | Constituents to be evaluated, may be banned, controlled, etc. | Banned/controlled constituents may reduce certain concentrations to lower or more acceptable levels. | |

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[1] More detailed summaries of these regulations can be found in Appendix H.

## TABLE 4-5 (continued)

| Regulation/Guidelines | Major Emphasis/Requirements | Major Impacts on District Solids Management | Potential District Actions |
|---|---|---|---|
| Federal, Safe Drinking Water Act of 1974 (PL 93-523) | Established Interim Primary Drinking Water Regulations; Secondary Drinking Water Regulations. | Current Impacts - appears to be none. | None appears required at present. |
| | Will establish, revise as necessary, National Primary Drinking Water Regulations. | Long-term Impacts - unknown. | Establishment of pretreatment standards/controls could provide effluent which conforms to maximum permissible concentrations. |
| | Provides for protection of underground drinking water sources. | | |
| U.S. Environmental Protection Agency, Technical Bulletin, Municipal Slidge Management | Develops guidelines on factors to be considered in the Environmental Assessment and in reviewing particular situation. | To receive Federal funding of future projects, may require establishment of pretreatment standards/controls/program. | All potential actions as indicated above. |
| | Recommends development of pretreatment regulations. | May severely limit options available for solids disposal if no limits placed on metals discharge. | |
| | Recommends limits on metals contents/loading. | All impacts as indicated above. | |
| State of Wisconsin, Technical Bulletin No. 88 | Recommends total wastewater solids applications based on heavy metals yearly metal equivalent loadings, with limitations on cadmium additions of 2 lbs/acre/yr with a total site lifetime maximum of 20 lbs/acre. | Limitations on the application of solids to land. | Limitations may require adoption/implementation of pretreatment standards to permit continued widespread land application. |
| Other States | Basically, same as Wisconsin Technical Bulletin No. 88. | Same as Wisconsin Technical Bulletin No. 88. | May require pretreatment standards/controls to permit continued use of heat dried solids (Milorganite) in other states. |

Without firm guidelines and regulation, the legal aspects of attempting to solve anticipated problems remain unclear. Does the labeling of application rates and non-food crop usage pass the legal obligation for site monitoring from the distribution to the user? Will injecting solids into the soil as opposed to incorporation remove any liability associated with runoff or inadvertent cattle grazing? Does a verbal explanation to a farmer explaining when, where, and what planting can occur on a solids-spread field remove District responsibility for further surveillance?

Even without firm regulatory direction, the MMSD's sludge management policies have come under attack. As short-term remedies, the MMSD had four choices:

- No action.
- Reduce potentially toxic materials through prohibition.
- Develop a public educational program through informative labeling.
- Change the solids utilization policy to one of disposal.

It is the latter that the critics of the existing programs strongly endorsed.

The District Commissions felt a moral and legal obligation to respond to charges of endangering public health. Thus, the no action alternative was eliminated. The landfills located in the Metropolitan area could only handle a small quantity of wastewater solids produced by the MMSD's treatment plants.

The two remaining solutions, informative labeling and prohibition of potentially toxic materials, were adopted by the District.

Several packaging proposals for Milorganite were prepared. All proposals dealt with attempting to eliminate overapplication of Milorganite to food chain crops. The District Commissions ultimately chose the most conservative route and adopted labeling which warned against use in gardens. This action was viewed as temporary until such time as contaminant levels dropped into a universally accepted safe range. In order to meet this goal, the MMSD modified its Rules and Regulations to greatly reduce the Industrial Cadmium Concentrations.

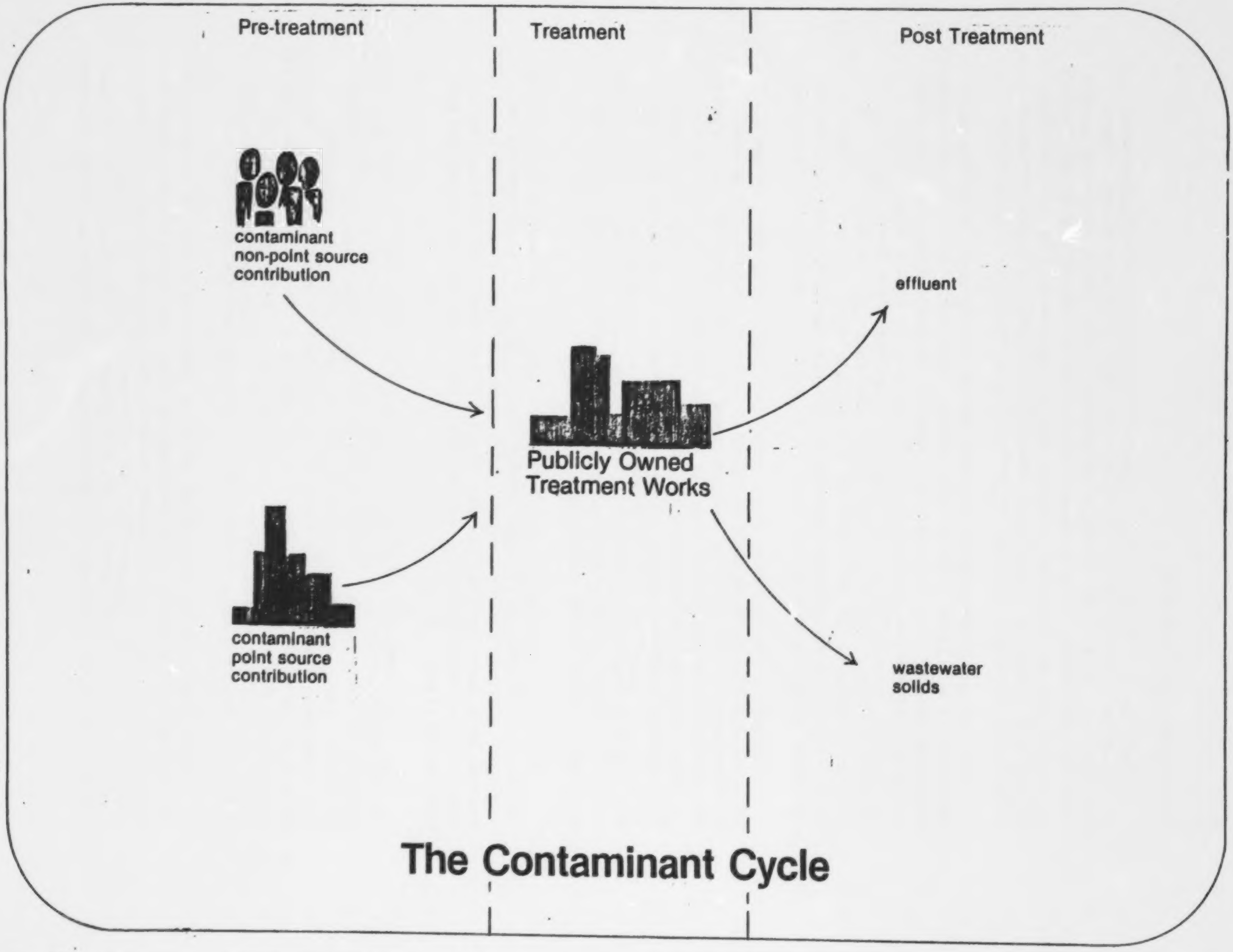
## Long-Term Solutions

The long-term solutions to the contaminant problem, not to be confused with short-term remedies, are extremely complicated. They involve the integration of three major efforts:

1. Source control (pretreatment).
2. Wastewater treatment.
3. Wastewater effluent and solids management (post-treatment).

Figure 4-2 pictorially presents the interrelationships between these efforts. It is with an understanding of these interrelationships, a knowledge of regulatory standards, and an acceptable data base as previously discussed that alternative solutions can be developed.

FIGURE 4-2



Pre-treatment
Treatment
Post Treatment
contaminant non-point source contribution
contaminant point source contribution
Publicly Owned Treatment Works
effluent
wastewater solids

The Contaminant Cycle

## Developing Local Standards

There exist two potential types of violations of standards caused by contaminant introduction to a publicly owned treatment works. These two types are direct and indirect violations. The direct violation occurs when the contaminant itself passes through the treatment system and results in a violation of standards, whether they be air, water, or land related. An indirect violation occurs when the introduction of a waste adversely affects the treatment process and results in a violation of a standard.

The general prohibitions included in the pretreatment standards were developed to eliminate indirect violations. Any variation from the Federally developed general prohibitions would have to be based upon potential waste contributions and the treatment plant's ability to handle them. Rules and Regulations similar to these general standards have been adopted by the MMSD in 1956. Experience has shown that this type of regulation is both an acceptable and effective method to eliminate indirect violations. Modifications to the proposed standards are not envisioned for biological treatment plants with dilution factors such as that existing in Milwaukee.

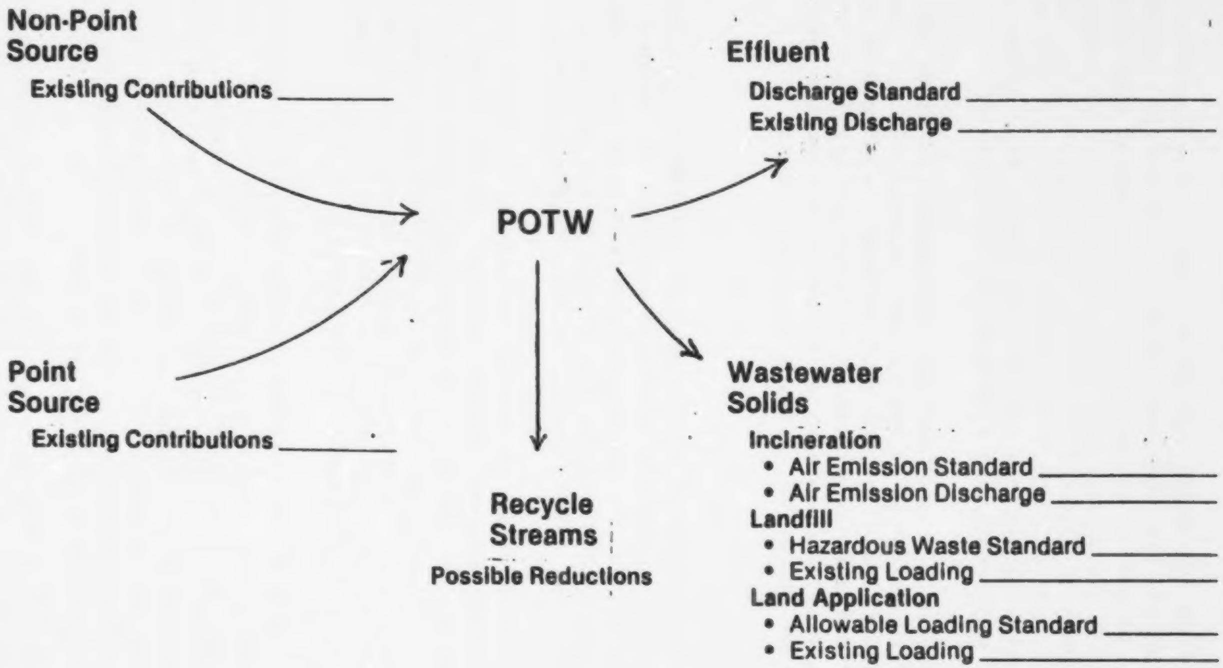
Addressing the problems of controlling direct violations is begun with the specific pretreatment standards. However, unlike the general prohibitions, it is unlikely that proposed specific standards will remain intact or have a similarity from one city to another. The localization of these standards is necessary to avoid one of two possible conditions: Pretreatment standards which are not strict enough to ensure compliance with air, effluent, or solids standards, and pretreatment standards which are over-restrictive and result in unnecessary costs to industrial concerns. Such a situation would affect industrial competitiveness and, thus, the economic welfare of the community.

A detailed alternative development and analysis is necessary to adjust pretreatment standards to local conditions. Figure 4-3 is presented as a tool in alternative development. For each pollutant proposed to be covered by a specific pretreatment standard, the form must be completed. Where factual information is not available, projections and/or assumptions must be utilized.

All work conducted to date by the MMSD indicates that the removal of contaminants from the influent wastewater is not cost-effective when compared to pretreatment. However, research has shown that the treatment of several recycle streams offers promising, cost-effective reductions in contaminant levels. Such a possible recycle stream at the Jones Island Treatment Plant is the filtrate from the vacuum filters. The ferric chloride conditioning preceding the filtration has significantly lowered the pH and has caused the solubility of heavy metals. This potential contaminant removal at the treatment plants must be entered into the mass balance.

After completion of individual forms, a composite should be constructed. In the case of the MMSD, it is anticipated that the pretreatment standards associated with solids utilization methods such as compost, agricultural application, and Milorganite will be very restrictive. It is possible that pretreatment alone will not be sufficient for the District to continue a policy of solids utilization. Recycle stream treatment and/or attempting

FIGURE 4-3



**Non-Point Source**
Existing Contributions ________

**Point Source**
Existing Contributions ________

**POTW**

**Effluent**
Discharge Standard ________
Existing Discharge ________

**Recycle Streams**
Possible Reductions

**Wastewater Solids**
Incineration
- Air Emission Standard ________
- Air Emission Discharge ________

Landfill
- Hazardous Waste Standard ________
- Existing Loading ________

Land Application
- Allowable Loading Standard ________
- Existing Loading ________

Contaminant ________

## Setting Local Pretreatment Standards Alternative Development Worksheet

to decrease contribution from nonpoint sources may have to be considered. Pretreatment standards associated with solids disposal methods such as incineration and landfill will be less restrictive.

It can be seen from the above discussion that a commitment to solids utilization extends beyond the treatment agency. The entire community through its industry is making a commitment. Pretreatment equipment must be purchased, operation costs must be borne, and prices to consumers will increase. It is because of these far reaching implications that firm regulatory guidance is needed. If a commitment is made to solids utilization based upon assumed regulations and more stringent regulations are finally promulgated, major economic consequences will result.

Thus, at a time when EPA is promoting recycle/utilization, its inability to provide firm guidance is having the opposite effect. Lest one conclude that disposal options are well defined, it should be pointed out that the question of what is a hazardous waste has still not been resolved. This determination, as applied to ash or wastewater solids, would have a great cost effect on ultimate disposal sites.

## Conclusion

The great amount of emphasis placed upon solids handling methods as a basis for setting pretreatment standards reflects the absence of contaminants from the District's Wisconsin Pollution Elimination System Permit. Should the District's permit be modified to include them, effluent quality may become the controlling factor in setting pretreatment standards.

The addition of a pretreatment element to the conventional treatment/post treatment system has many and varied impacts. In all cases, there will be a greater control on contaminants which could lead to environmentally sound use and/or disposal. The enforcement of pretreatment standards is an additional burden to be borne by the treatment agency. However, pretreatment will play a prominent role in a POTW's ability to meet air emission, effluent, and solids management regulations.

The fiscal impacts have been alluded to previously. Concisely, it can be said that a commitment to a pretreatment/treatment/post treatment system is made by more than the treatment agency. The community itself is making a major commitment as well. This commitment may take form in dollars for public treatment facilities, willingness to handle hazardous materials, selectivity in allowing new industry to move in and old industry to expand, understanding of potential risks of a system based on assumption, and the possible irreversibility of any such system.

The perpetration of the pretreatment element without solving the problems of the solids management element has increased the number of assumptions necessary for alternative development, magnified the need for firm Federal guidance, and increased the odds against establishing an appropriate pretreatment, treatment, and post treatment system. Because of the need to retain the slight degree of flexibility still available to a POTW and the severe and far reaching impacts, great care must be exercised in setting local standards.

## REMOVAL CREDITS: THE LOS ANGELES COUNTY EXPERIENCE

### Introduction

Industrial companies discharging wastewaters containing toxic materials or other substances which can cause an interference in the operation of a POTW will be subject to categorical pretreatment standards pursuant to Section 307(b) of the Clean Water Act. These standards require affected companies to install pretreatment equipment employing Best Available Technology Economically Achievable (BAT). This, in general, represents a significant increase in degree of pretreatment required from that currently in use by approximately 2,500 POTWs in the United States now receiving wastewaters from an estimated 323,000 companies. Categorical pretreatment standards developed and promulgated by EPA assume no removal of toxic or interfering substances in the treatment works (influent sewers or treatment plant), yet such removals do occur. Because of the tremendous costs that would result in failure to recognize these incidental removals, EPA has established procedures to give credit for these removals and, therefore, to prevent or reduce redundant treatment processes.

This section will examine the mechanism by which removal credits are given and will illustrate, using data and examples from the Sanitation Districts of Los Angeles County, the possible implication to both industrial dischargers and POTWs of obtaining removal credits. The basic rules and philosophy regarding removal credits were published in the Federal Register on June 26, 1978. Significant proposed changes to these rules were published on October 29, 1979. While the proposed rules have not yet been finalized, this section will approach the removal credits as though the October 29, 1979, amendments are final.

### The Purpose of Removal Credits

The purpose for allowing removal credits is to prevent duplication of treatment while insuring equity between all industrial dischargers, whether they discharge directly to the environment or indirectly through a POTW. Direct dischargers are required to meet BAT levels of treatment with effluents regulated by national standards expressing pollutant levels in terms of mass per unit of production (usually amount of raw material processed or amount of product manufactured). Disregarding the costs associated with adequately monitoring this type of standard, it is obvious that the principal of national equity is achieved.

For indirect dischargers whose wastes are treated at a POTW, however, EPA recognized that similar standards could not be enforced by local POTWs owing to the difficulty of obtaining flow rates and production rates whenever samples are taken. Concentration based pretreatment standards have been and will be issued for indirect dischargers. In allowing removal credits to be applied to these standards, it is the intent of EPA that the combined level of treatment provided by both the industrial company and the POTW should equal the level of treatment that a direct discharger would have to meet. EPA believes that this objective will be met by allowing a POTW to give credit for only those pollutant removals consistently observed. This definition of consistent removal has been subject to extensive national debate with EPA having backed off in its requirements for removals seen 95% of the time to those seen 75% of the time.

## Calculation of Removal Credits and Revised Pretreatment Standards

The removal credit is the difference between the POTW's influent and effluent concentrations expressed as a decimal percentage of the influent concentrations:

$$R = \frac{C_i - C_e}{C_i}$$

Where $R$ = removal credit
$C_i$ = influent concentration
$C_e$ = effluent concentration

The removal credit is then applied to a categorical pretreatment standard as follows:

$$Y = \frac{X}{1-R}$$

Where $Y$ = revised discharge limit for pollutant
$X$ = pollutant discharge limit specified in categorical pretreatment standards
$R$ = removal credit

Removal credits are pollutant specific and any removal credit granted by the POTW must be applied to all industrial dischargers having that constituent in its wastewater. It should be noted that influent concentration does not necessarily refer to those concentrations at the inlet to a treatment plant, but can refer to concentrations in the tributary sewer system if, during the transit time in the sewers, the pollutant is removed and/or chemically or biologically altered to some other non-toxic component.

For those POTWs with combined sewer systems that bypass untreated wastewater to the environment at a frequency of at least once per year, a different formula is used to determine revised pretreatment standards:

$$Y = \frac{X}{1-R} \quad \frac{8670 - Z}{8760}$$

Where $Y$, $X$, $R$ = terms previously defined above
$Z$ = number of hours per year that bypassing occurred
8760 = number of hours per 365 day year.

There are several rules for dealing with cases when pollutants are at concentrations below analytical detection limits. If the pollutant cannot be measured in the effluent, then the detection level concentration can be used in the preceding formulas in lieu of an effluent concentration measurement. However, if the pollutant is not detected in the influent to a POTW (presumably the influent to the treatment plant), then no removal credit can be granted. Also, removal credits will not be granted to surrogate parameters such as COD, BODs, suspended solids, or oil and grease.

## Conditions for Receiving Removal Credits

The Clean Water Act (CWA) authorizes the granting of removal credits if the following conditions are met:

- The POTW removes all or part of the pollutant.
- In allowing the removal credit, the POTW would not be violating any effluent limitation applicable to the pollutant if the industrial discharge were a direct discharger.
- The granting of the removal credit does not prevent use or disposal of the POTW's sludge in accordance with Section 405 of the Clean Water Act.

The general pretreatment regulations establish the following specific requirements to insure compliance with the CWA provisions:

- Consistent removal for a POTW is defined as the average of the lowest 50% of measured removal values when 12 or more samples have been obtained. If between 8 and 11 samples are obtained by the POTW, the average of the lowest 6 removals is used; and if less than 8 samples are obtained, some other method, unspecified in the regulations but to be agreed upon by EPA and the POTW, is to be used. Samples are defined as 24-hour composites as a minimum, each composed of discrete grab samples taken not more than 2 hours apart. The influent and effluent samples are to be taken, not simultaneously, but one POTW detention time apart. Also, samples are to be taken throughout the year to be representative of all seasonal conditions experienced by the POTW and be typical of normal influent and effluent conditions.

- To demonstrate that sludge use or disposal will not be interfered with, the POTW must analyze sludge samples in a similar manner and at the same time as above and show that the present disposal method will not be interfered with by granting removal credits. To insure this, the regulations require that the POTW NPDES permit specify compliance with all applicable Federal and State sludge disposal requirements.

## Procedures for Applying for Removal Credits

The POTW can request removal credits prior to its receiving an approved pretreatment program; however, the Approval Authority is not obligated to rule on the request until the application for pretreatment program approval is received. The application has to specify the pollutants for which removal credits are requested along with the technical data documenting the POTW's removals. In addition, the POTW must supply a list of the industrial subcategories that would be affected by the removal credits, including numbers of affected companies in each subcategory along with a description of the level of pretreatment technology each industrial company plans to install. Removal credits requested prior to approval of the POTW's pretreatment program are known as conditionally revised categorical pretreatment standards. Industrial users to be given the removal credit must submit information regarding the nature of their business and wastewater discharge and must enter into an agreement with the POTW to install the required technology to meet the conditionally revised categorical pretreatment standard. In addition, the POTW is required to submit, in a timely manner, its request for pretreatment program approval.

At the present time in the State of California, the Approval Authority that would rule on an application for removal credits would be the EPA because the State Water Resources Control Board has not requested, or even indicated that it intends to request, authority to run pretreatment programs in California. However, even though it lacks the authority to approve removal credit application, the State is obligated to review all applications prior to submittal to EPA and, if it so chooses, can recommend denial of the application. A POTW cannot appeal a State's denial to the EPA.

After the initial application for removal credits is made and the POTW has an approved pretreatment program, the POTW can submit subsequent applications at a rate not to exceed more than one per year. The Approval Authority is not obligated to act on these until the POTW's NPDES permit comes up for renewal, a three-year period at a maximum. Subsequent applications will be required because of 1) new categorical pretreatment standards being promulgated; 2) industrial facilities being modified or constructed which introduce toxic pollutants not previously in the POTW's system; and 3) significant increases in a POTW's removal efficiency attributable to specific identifiable circumstances such as construction of more advanced wastewater treatment facilities.

## Significance of Removal Credits

Granting removal credits creates a partnership on the part of the POTW and its industrial users to comply with all applicable requirements that were the basis of the approval. The POTW's NPDES permit will be revised to require the POTW to monitor industrial discharges to insure the revised pretreatment standards are being met; insure that the POTW's claimed removal credit remains at least at the level stated in the application; and insure that sludge quality at the POTW is not being adversely affected.

If the POTW does not abide by the conditions, the Approval Authority can revoke the modifications to the categorical pretreatment standards and all industrial users will then have up to three years to install necessary technology to meet the standard. If, on the other hand, industrial users fail to comply with their revised categorical pretreatment standard, either the POTW or the Approval Authority can revoke the modified standard and require the offending industrial user to comply with the unmodified categorical pretreatment standard. There is no mechanism in the regulations whereby an industrial user, having once been guilty of not complying with requirements and having modified pretreatment standards revoked, could ever seek modifications in the future.

To support its claim of consistent removal of a pollutant, the POTW must sample, analyze, and determine removal credits at a frequency of at least twice per year. There is no provision in the regulations that specifies how much allowable difference can exist between the original removal credit obtained and the results of the on-going verification monitoring before the Approval Authority is to become suspicious that the POTW is failing to comply with its obligated removal efficiency. If the Approval Authority determines that the POTW has not corrected the situation within 60 days, then the modified pretreatment standards can be revoked or changed to account for a lower removal within the POTW. Prior to doing so, all affected industrial users must be notified and given an opportunity to attend a hearing on the matter. Again, if the removal credits are revoked or reduced, affected industrial users will have up to three years to improve their pretreatment equipment to meet the new standards.

## Special Problems Affecting POTWs with Combined Systems

As previously mentioned, POTWs with combined systems that at least once per year bypass untreated wastewaters to the environment have to meet special conditions to receive removal credits. There are two alternative methods by which these POTWs can be granted removal credits. The first, and for all practical purposes the only method, is through use of the previously mentioned equation that factors in the number of hours of bypassing that takes place. In addition, after July 1, 1983, the POTW must be making an effort to implement a bypass control program to eliminate such conditions. For the few municipalities in California with combined systems, the factoring in of hours bypassed results in a slight reduction in the modified categorical pretreatment standard that would be allowed if no bypassing occurred:

| Days Per Year Bypassing Occurs | Per cent Reduction From Maximum Revised Pretreatment Standard |
|---|---|
| 1 | 0.3 |
| 7 | 1.9 |
| 30 | 8.2 |
| 60 | 16.4 |
| 90 | 24.7 |

The second alternative method allowed by EPA for POTWs with bypasses to receive removal credits requires industrial users to cease discharge to a POTW during a time that a bypass is occurring or likely to occur. Also, the POTW must identify circumstances in which a bypass can reasonably be expected to occur and have developed a notification plan to inform industrial users. Lastly, the POTW must have the resources to monitor all affected industrial users to insure that, during a bypass condition, industrial wastewater discharges have ceased.

It is believed that the requirements of this latter option are so restrictive as to be ridiculous and unworkable. In many communities in California, for example, the U.S. Weather Service is unable to predict, except in the most general of probabilities, the chance of precipitation occurring let alone the magnitude thereof. Application of this option would result in POTWs with bypass potentials having to shutdown industrial operations on frequent occasions.

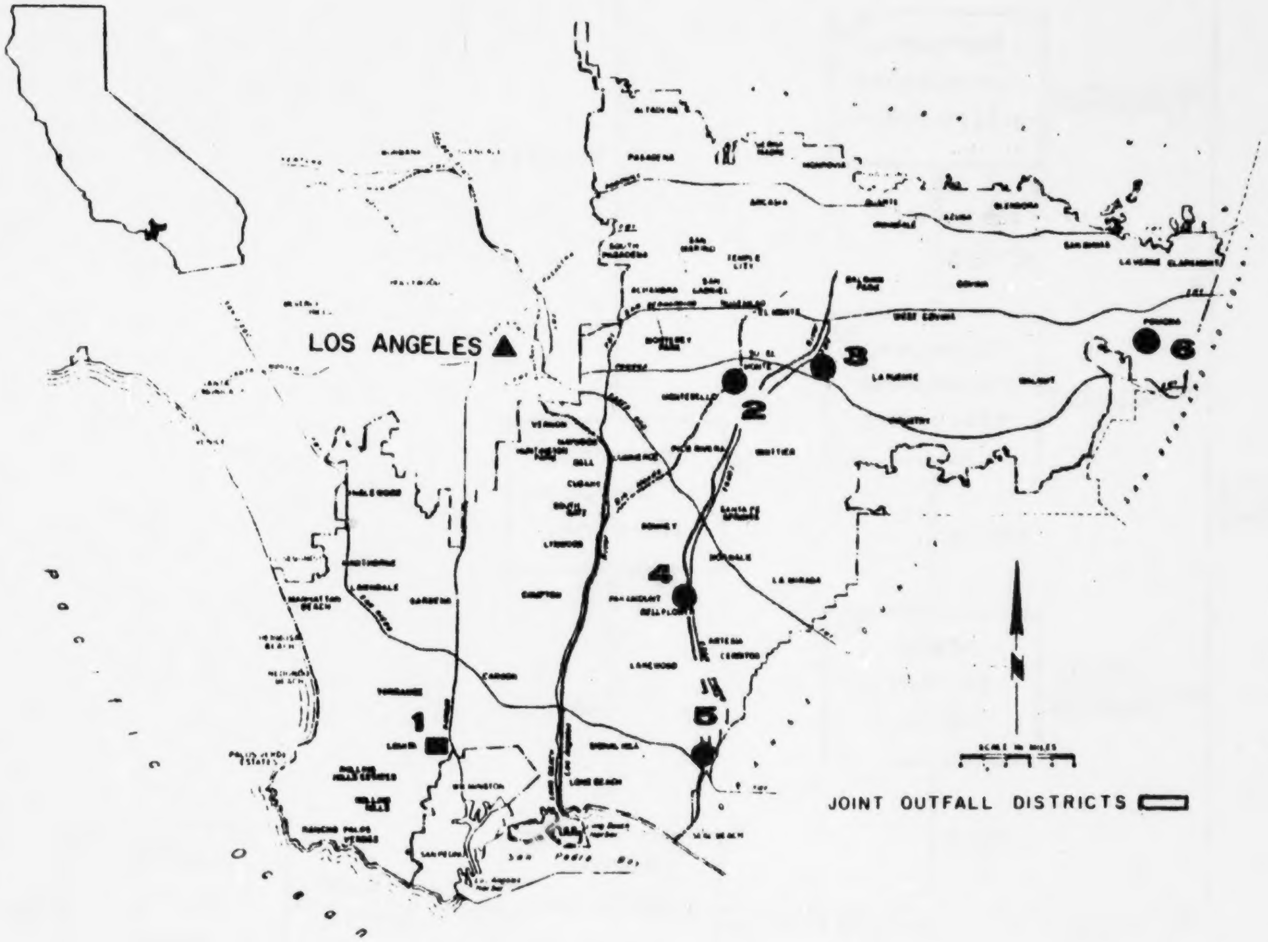
## Removal Credits as Applied to the Sanitation Districts' Sewerage System

The Sanitation Districts of Los Angeles County (Districts) operate six treatment plants in the metropolitan Los Angeles area. The six plants are connected to a common sewer collection system and the entire system is known as the Joint Outfall System (JOS). The entire system services a tributary area of about 620 square miles having a population of 3,650,000 and approximately 8,000 industrial dischargers. Preliminary estimates are that over 2,500 industrial users within the Sanitation Districts will be subject to categorical pretreatment standards. See Figure 4-4 for a map illustrating the JOS service area. Five of the treatment plants, the upstream plants, with a total treatment capacity of 110 mgd, employ tertiary processes consisting of step-feed activated sludge treatment plants employing mixed media filtration of effluent. All sludges, skimmings, and other waste flows from the five plants are returned to the sewer system for conveyance to the sixth treatment plant, the Joint Water Pollution Control Plant (JWPCP). This 385 mgd capacity facility is the end-of-the-line plant for the JOS prior to discharge into the Pacific Ocean. It is at the JWPCP where solids processing occurs and permanent removal of solids from the liquid wastewater occurs. Current Districts' planning calls for a near term expansion of treatment capacity to about 160 mgd at the upstream plants. The JWPCP is planned to eventually have a maximum flow of 300 mgd with 200 mgd being treated by the UNOX pure oxygen activated sludge process and the entire flow treated by advance primary treatment consisting of polymer aided primary sedimentation and fine mesh screening of the primary effluent. Current construction schedules call for the 200 mgd of secondary treatment to be operational by March 1982 with the first 100 mgd unit coming on line in April 1981. Sludges generated in the primary treatment processes are and will be treated by anaerobic digestion followed by a two-stage centrifugation dewatering process. Sludges generated in the UNOX process will likewise be anaerobically digested, partially dewatered by a two-stage centrifugation process, with the sludge cakes totally dewatered by a multiple effect evaporation process. Currently, the Districts produce 267 tons per day (dry weight basis) of dewatered sludge of which 100 tons per day are sold to a manufacturer of fertilizer and soil conditioning products. The remainder of the sludge is landfilled. This reuse of sludge has been an ongoing activity for approximately 40 years, and the Districts have committed themselves to continue this in the future complying with all applicable regulations. Alternative disposal methods are extremely expensive by comparison. Figure 4-5 is a schematic of this treatment scheme.

The Districts have considerable quantities of data relating to removal efficiencies of heavy metals from the polymer aided, primary treatment process. Limited data are available on removal efficiencies of the two-stage centrifugation dewatering process and from a UNOX pilot plant. It should be noted that, owing to the existence of several inlet works at the JWPCP built over the years to accommodate increasing flows, it was not possible to direct all incoming flows at the JWPCP to the UNOX pilot unit. Therefore, the relationship of the pilot plant removal data to full plant operational removals will not be known for sure until after April 1981. Also, there are no removal data concerning the multiple effect evaporation process. This process, employing high temperature-low pressure evaporation, should result in a very high removal rate of heavy metals

FIGURE 4-4

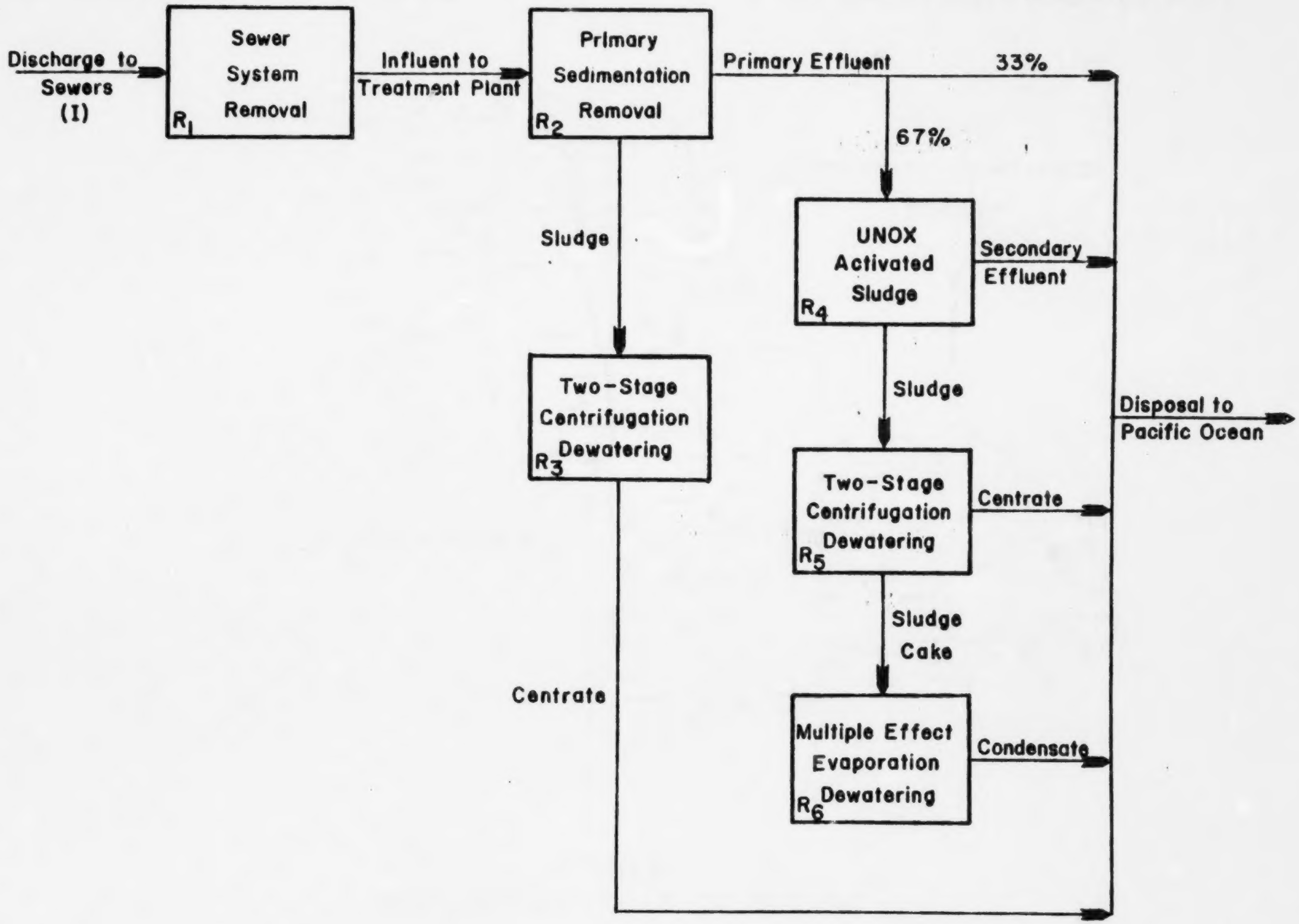
JOINT OUTFALL SYSTEM SERVICE AREA


LOS ANGELES
1
2
3
4
5
6
JOINT OUTFALL DISTRICTS
N
Pacific Ocean
San Pedro Bay

1 JOINT WATER POLLUTION CONTROL PLANT
2 WHITTIER NARROWS WATER RECLAMATION PLANT
3 SAN JOSE CREEK WATER RENOVATION PLANT
4 LOS COYOTES WATER RENOVATION PLANT
5 LONG BEACH WATER RENOVATION PLANT
6 POMONA WATER RENOVATION PLANT

FIGURE 4-5

Schematic Diagram of Pollutant Removal Processes at the Joint Water Pollution Control Plant


Discharge to Sewers (I)
Sewer System Removal
$R_1$
Influent to Treatmsnt Plant
Primary Sedimentation Removal
$R_2$
Primary Effluent
33%
67%
Sludge
UNOX Activated Sludge
$R_4$
Secondary Effluent
Two-Stage Centrifugation Dewatering
$R_3$
Sludge
Disposal to Pacific Ocean
Two-Stage Centrifugation Dewatering
$R_5$
Centrate
Sludge Cake
Centrate
Multiple Effect Evaporation Dewatering
$R_6$
Condensate

$$\text{Overall Removal} = \frac{I-E}{I} = 1-(1-R_1)\left[1-R_2R_3-.67R_4R_5R_6(1-R_2)\right]$$

with the possible exception of mercury. However, the removal rates of toxic organic materials are unknown. The waters evaporated and condensed are known to be high in COD from volatile organic compounds.

In addition to the removals occurring at the JWPCP, it is a known fact that many organic materials are biologically degraded in the anaerobic environment of the tributary sewerage system. Very few data, with the exception of phenol, are available on this phenomona, but it is a consistent process and, therefore, subject to being included in a POTW's removal credit if sufficiently well documented.

Under the assumption of a normal distribution of removals by each of the treatment processes, it is possible using statistical evaluation to determine the expected mean and standard deviation of the JWPCP's future overall combined treatment process even though no data exist for the full system. The requirement of using the average of the lowest 50% of the removal data to establish the removal credit is equivalent, for normally distributed data, to using the removal observed in at least 75% of all samples.

In Table 4-6 there are listed actual and estimated removal data for nine toxic metals. As there would be no removal of these substances in the sewerage system, the term $R_1$ becomes zero for these cases. The calculated removal credit for each pollutant is given and, as seen, averages approximately 55%.

The significance of these removal credits is shown in Table 4-7, which applies these calculated credits to the categorical pretreatment standards for the electroplating point source category. Also shown on the table are the current Districts' Phase I source control limits. These limits were established to meet local receiving water quality criteria and represent, in general, effluent levels obtainable by most electroplating facilities employing only good housekeeping techniques such as countercurrent rinsing, spill containment systems, and static dragout tanks. It is obvious that the unmodified categorical pretreatment limits represent a significant level of pretreatment beyond good housekeeping rules, and for most of the seven metals listed, the modifications to the pretreatment limits to account for anticipated removals at the JWPCP do not make a significant reduction in the pretreatment required.

For chromium and copper and perhaps silver and nickel, however, the modified pretreatment standards could result in significant savings in capital investments and O&M for electroplating companies. For example, assume that a conventional pretreatment system used by electroplating companies, employing precipitation of metal hydroxide sludges, can achieve on the average a 95% reduction in metals concentration. By treating only a portion of the electroplating wastewater to this level and then blending the treated wastes with the remaining untreated flow, (the untreated flow is assumed to be at a concentration near the Phase I level), overall effluent concentrations in conformance with the modified categorical pretreatment standards can be achieved. Table 4-8 shows that for the metals chromium, copper, nickel, and silver a significant portion of the waste could be bypassed and still meet the modified pretreatment standard. The savings in capital costs in not having to build systems capable of treating all

# TABLE 4-6

## ACTUAL AND PROJECTED REMOVALS OF HEAVY METALS BY JWPCP TREATMENT PROCESSES

| Pollutant | Advanced Polymer Primary Sedimentation Process 1/ | | | UNOX Activated Sludge and Secondary Sedimentation Process 2/ | | | Two-Stage Centrifugation Sludge Dewatering Process 3/ | | | Multiple-Effect Evaporation Sludge Drying Process | | | Projected JWPCP Treatment Removals with 2/3 UNOX Secondary Treatment | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number of Samples | Average Removal $R_2$ | Removal Std Dev $\sigma_2$ | Number of Samples | Average Removal $R_4$ | Removal Std Dev $\sigma_4$ | Number of Samples | Average Removal $R_3$ & $R_5$ | Removal Std Dev $\sigma_3$ & $\sigma_5$ | Number of Samples | Average Removal $R_6$ 5/ | Removal Std Dev $\sigma_6$ 6/ | Average Removal $R_t$ | Removal Std Dev $\sigma_{rt}$ 7/ | Consistent Removal 8/ |
| | | % | % | | % | % | | % | % | 4/ | % | % | % | % | % |
| Arsenic | 44 | 47.9 | 25.1 | 6 | 50.0 | 44.7 | 8 | 92.2 | 4.7 | 0 | 99.9 | 2.0 | 60.2 | 39.2 | 33.8 |
| Cadmium | 52 | 44.5 | 7.5 | 15 | 73.5 | 6.2 | 8 | 90.6 | 0.8 | 0 | 99.9 | 2.0 | 65.0 | 7.8 | 59.8 |
| Chromium | 52 | 62.1 | 8.8 | 23 | 71.5 | 13.1 | 8 | 93.5 | 6.1 | 0 | 99.9 | 2.0 | 75.0 | 12.6 | 66.5 |
| Copper | 52 | 59.1 | 10.5 | 22 | 83.1 | 6.1 | 8 | 93.4 | 5.5 | 0 | 99.9 | 2.0 | 76.4 | 13.0 | 67.6 |
| Lead | 52 | 63.0 | 7.4 | 16 | 67.8 | 11.4 | 8 | 95.0 | 4.6 | 0 | 99.9 | 2.0 | 75.8 | 12.2 | 67.4 |
| Mercury | 48 | 54.0 | 15.8 | 17 | 76.5 | 10.2 | 8 | 92.4 | 5.5 | 0 | 95.0 | 10.0 | 70.6 | 18.3 | 58.2 |
| Nickel | 52 | 27.4 | 9.6 | 24 | 24.6 | 14.0 | 8 | 92.6 | 4.9 | 0 | 99.9 | 2.0 | 36.4 | 12.8 | 27.8 |
| Silver | 46 | 47.6 | 9.7 | 18 | 69.2 | 10.2 | 8 | 93.6 | 5.5 | 0 | 99.9 | 2.0 | 67.3 | 12.9 | 58.6 |
| Zinc | 52 | 58.4 | 9.9 | 23 | 58.2 | 26.7 | 8 | 94.0 | 4.9 | 0 | 99.9 | 2.0 | 70.1 | 29.8 | 50.0 |
| | | | | | | | | | | | | | Average | | 54.4 |

Notes:
1. Data based on samples taken from operation of 350 mgd full plant primary sedimentation process.
2. Data based on samples taken from 0.5 mgd pilot plant.
3. Data based on samples taken from operation of 40 full scale centrifuges.
4. No pilot plant or other operational data.
5. Estimates based on engineering judgement. It is assumed mercury being volatile would have lower removals in this process.
6. Estimates based on 2% coef. of variation for all pollutants except mercury where 5% coef. of variation was used.
7. Calculated from analysis of variance of individual removal processes.
8. Calculated as $R_t$ - (.675)($\sigma_{rt}$) and is removal expected equivalent to average of lowest 50% of removals.

## TABLE 4-7

## COMPARISON OF SANITATION DISTRICTS' AND EPA'S SOURCE CONTROL LIMITS

| Pollutant | Sanitation Districts' Phase I Source Control Limit | EPA Pretreatment Standard For The Electroplating Point Source Category (30-Day Average Limit) | |
|---|---|---|---|
| | | Unmodified Standard | Modified to Account For Projected JWPCP Consistent Removals |
| | mg/l | mg/l | mg/l |
| Cadmium | 15 | .5 | 1.2 |
| Chromium | 10 | 2.5 | 7.5 |
| Copper | 15 | 1.8 | 5.6 |
| Lead | 40 | .3 | .9 |
| Nickel | 12 | 1.8 | 2.5 |
| Silver | 5 | .5 | 1.2 |
| Zinc | 25 | 1.8 | 3.6 |

TABLE 4-8

## EFFECT OF APPLYING REMOVAL CREDITS TO ELECTROPLATING PRETREATMENT STANDARDS REDUCTION IN REQUIRED PRETREATMENT EQUIPMENT CAPACITY

| Pollutant | Assumed Effluent Quality After Treatment of Electroplating Wastewater With BAT Pretreatment System | Percent of Flow That Can Be Bypassed Around Pretreatment System And Still Allow Company to Comply With Pretreatment Standard | |
|---|---|---|---|
| | | If Unmodified Pretreatment Standard To Be Met | If modified Pretreatment Standard To Be Met |
| | mg/l | % | % |
| Cadmium | .5 | 0 | 0 |
| Chromium | .5 | 21 | 74 |
| Copper | .8 | 7 | 33 |
| Lead | .3 | 0 | 0 |
| Nickel | .6 | 11 | 17 |
| Silver | .3 | 4 | 19 |
| Zinc | 1.3 | 2 | 10 |

of the electroplating wastewater will obviously serve as an incentive to pressure POTWs to apply for removal credits. However, as mentioned below, this analysis considered only removal efficiencies at the POTW and ignored sludge quality. This latter point is likely, in the case of the Sanitation Districts, to have a far greater impact on the granting of removal credits for those conservative pollutants such as heavy metals.

As previously mentioned, consistent removals occurring in the sewers leading to the treatment plant are allowed to be included in removal credit calculations. Removals of this nature involve biological or chemical conversion of toxic substances, usually organics, to other non-toxic compounds. As an illustration of the magnitude of this phenomena, Table 4-9 summarizes data, obtained over a period of two years taken at the JWPCP and at upstream industrial companies, that indicate a consistent removal approaching 50% of phenols in the sewer system. In addition to phenols, the only organic pollutant for which data are available, it is believed that many toxic organic compounds experience similar removals in the sewers and only a few, such as PCBs and DDT, experience no removals.

However, for a POTW to allow this sewer as part of its removal credit is a difficult, if not impossible, task. The removal in the sewer system is obviously a function of detention time which, for industrial users, would be related to their location on the influent sewer network. Because of EPA's rule that removal credits, if given, must be applied equally to all industrial discharges within the same industrial subcategory, any sewer system removal credit would have to be the one representing the industrial discharger having the minimum detention time in the sewers. Extensive laboratory testing would be required to characterize a removal versus time relationship. And, if a sewer system removal credit were given, it would be subject to possible drastic alteration if in the future a new discharger proposed to establish a facility a significantly closer distance to the treatment plant than existing dischargers of that pollutant.

The failure to account for these sewer removals will necessarily result in greater duplication of treatment facilities and be counter to the goals of the national pretreatment program. This may not, however, necessarily result in any significant difference in cost of pretreatment to the industrial discharger. As an illustration of the consequences of allowing or not allowing these sewer system removal credits, the proposed BAT categorical pretreatment standards for the petroleum refining point source category call for a maximum phenol concentration of 0.032 mg/l in refinery wastewaters if the POTW treating these wastes does not have full secondary treatment. Analysis of the anticipated removals at the JWPCP shows that with the 2/3 secondary treatment scheme previously discussed, phenols removal would be 67% not accounting for the sewer system removals and 83% with that effect being included. The modified pretreatment standards for the two cases would be 0.10 mg/l and 0.19 mg/l, respectively. The wastewaters discharged by the 16 refineries within the Sanitation Districts average 50 mg/l phenols; therefore, a 99.8% reduction would be required at the refineries if a POTW removal credit of 67% were used, whereas a 99.6% reduction would be required at the refineries if a POTW removal credit of 83% were used. Neither of these is much different from the 99.9% reduction at the refineries that would be required if no POTW removal credit was given.

## TABLE 4-9

## SEWER SYSTEM REMOVALS PARAMETER: PHENOLS

| Measured Inputs to Sewer System (lbs/day) | | Measured Input at POTW (lbs/day) |
|---|---|---|
| Sixteen Petroleum Refineries : | 7,340 | 7,800 |
| One Chemical Manufacturing Company: | 7,900 | |
| Residential Inputs (Estimate) : | 100 | |
| Total : | 15,340 | |
| Sewer System Removal: 49% | | |

To date, the phenol concentration limit in the proposed petroleum refining BAT pretreatment regulations is one of only two standards which have been proposed involving organic compounds other than the surrogate parameters oil and grease, COD, and $BOD_5$, for which removal credits are not allowed. The second organic compound is pentachlorophenol, found in the timber products processing proposed pretreatment standards for which a maximum allowable discharge concentration of 0 mg/l is specified. It would appear that if future categorical pretreatment standards are as restrictive regarding allowable toxic organics concentration as are these two, removal credits, with or without sewer system removals, will be of no benefit to industrial dischargers.

## Disadvantages to POTW to Grant Removal Credits

As previously mentioned, EPA considers that granting of removal credits by a POTW to industrial users creates a partnership whereby both parties, the POTW and the industrial users, become jointly responsible for complying with all necessary conditions. Should one or more industrial users fail to comply with the modified pretreatment standards and the POTW fails to institute corrective actions within 30 days, the Control Authority, EPA, can bring enforcement action against both parties with apparently equal fines and other penalties to be applied to each.

Currently the Districts' Phase I Source Control Program involves approximately 500 industrial users, approximately 10% of which are under enforcement for violations of the standards. Based on three years experience enforcing this less restrictive pretreatment program, it would appear reasonable that from 200 to 300 industrial users will be in violation of the categorical pretreatment standards at any given point in time. The majority of the violators recognize their responsibility and make necessary changes to achieve compliance in as short a time as possible. A very small number of dischargers, however, have openly defied the Districts' regulations, and this attitude might likely increase because of EPA's categorical pretreatment program which has no bearing on local water quality requirements in receiving waters. For the Districts to have to assume the responsibility of preventing and correcting this to EPA's satisfaction, or face having hundreds of companies expend millions of dollars for pretreatment equipment, places a burden of responsibility on the agency not likely to be welcomed by its staff or management.

In addition, it would appear that the underlying assumption of a linear relationship between influent and effluent concentration levels is invalid. While verification of this point will need to await data obtained on the full scale treatment processes at the JWPCP, preliminary indications are that effluent concentrations (E) are related in a logarithmic manner to influent concentrations (I), i.e., E log I. The JWPCP treatment systems are able to buffer and mitigate the effects of high influent concentrations. While this is desirable, it also results in a change in the overall removal efficiency that occurs if significant reductions in influent concentrations occur. It is therefore expected that as the EPA pretreatment program causes reductions in influent concentrations to the POTW, effluent concentrations will not be reduced in the same proportion. Thus, initial removal credits granted to industry may need to be lowered in future years, resulting in industrial discharges having to possibly add more pretreatment facilities than originally planned. Clearly, industry needs to know the full extent of its capital investment requirements in pollution control equipment at the start of the pretreatment program. Barring some unlikely breakthrough in technology that results in dramatic reductions in the cost of pretreatment systems, inflationary cost increases make it more economical to purchase and install pretreatment equipment now than at some future date.

## Costs to POTW to Establish Removal Credits

The EPA estimated that approximately 360 POTWs in the United States would apply for modifications to the categorical standards and would spend on the average $29,000 (1978 dollars) in preparing necessary data. For the Districts, it is estimated that far more than the minimum 12 samples would be needed to accurately characterize the removal credit. Assuming that it is desired that the consistent removal calculated by the Districts based on a limited number of samples shall at the 95% confidence level be no more than 15 % different from the true actual consistent removal that would be measured if continuous sampling were done, the number of samples required is calculated from:

$$N = \frac{(1.96)^2 \quad (V)^2}{(15)^2} = 0.017\ V^2$$

Where: N = number of required samples
V = coefficient of variation of removal data expressed as %
1.96 = "t" statistic for 95% confidence level
15 = maximum allowable error of prediction expressed as %

Data from Table 4-6 suggest that 90 percent of all toxic pollutants will have a coefficient of variation of treatment plant removal data equal to or less than 42%. Use of this in the above formula for "V" would indicate that, as a minimum, 30 samples should be taken to measure treatment plant removal efficiency, and for no more than 10% of the toxic pollutants would the Districts' estimate of removal credit exceed the aforementioned criteria. The number of toxic pollutants needed to be analyzed in each sample is unknown at this time because so few categorical pretreatment standards have been issued. Assuming that only one-half of the 65 toxic pollutants have to be analyzed in influent and effluent samples and only heavy metals in sludge samples, the Districts' estimate that the total cost of determining removal credits would be approximately $95,000 (see Table 4-10). However, should all 65 toxic pollutants need to be analyzed in all samples, including sludge samples, the total cost would approach $200,000. These costs, unlike other activities a POTW is required to undertake as part of its pretreatment program development, are not eligible for grant funding. Thus, the Sanitation Districts would need to fund this activity on their own. To date there has been no strong support on the part of local industrial companies for the Districts to undertake this activity. The Districts do not have any mechanism in their revenue collection program to directly assess these costs to only those companies affected by categorical pretreatment standards. Rather, the costs would be borne by industrial companies in proportion to the total strength

TABLE 4-10

## ESTIMATED COSTS TO SANITATION DISTRICTS TO DETERMINE REMOVAL CREDITS

| Activity | Costs |
|---|---|
| Sampling: | |
| Special equipment designed for sampling toxic organics | 10,600 |
| Wages & overhead of sampling crew's time | 4,700 |
| Depreciation of miscellaneous existing equipment | 500 |
| Sub-total this task | $15,800 |
| Laboratory Analyses: | |
| Analyses of 30 influent & effluent samples for 1/2 of 65 priority toxic pollutants and 30 sludge samples for heavy metals including laboratory supervisory overhead | $72,400 |
| Engineering Review: | |
| Review of data, including statistical, analyses, typing of final report, and Districts' management reviews | $ 7,100 |
| TOTAL COSTS | $95,300 |

Note: Costs of equipment based on vendor quotes obtained May 1980, includes sales tax, Districts' personnel costs based on 1979-80 salary schedule includes standard personnel and administrator overhead factors.

of their industrial waste discharge. Several dozen large food processing companies, having no toxic materials and not falling under the categorical pretreatment program, would pay a good share of the costs.

## Sludge Disposal Requirements

One of the three conditions a POTW must meet to grant removal credits is that sludge use or disposal will not be interfered with. Previous regulations have not fully clarified the role to which EPA will regulate sludge quality with regards to the JWPCP's sludge reuse program. However, proposed draft regulations concerning distribution and marketing of sewage sludge were released in May 1980. Significant rules affecting POTW's acceptance of the use of removal credits have been promised by EPA and are expected soon. They will then be released as proposed regulations subject to EPA's formal review and clearance procedures. Final regulations are not expected to be published until December 1981.

The May 1980 document indicates that EPA will impose severe limitations on allowable concentrations of cadmium, lead, and PCBs in sewage sludges disposed of by land application. As such, removal credits for these three parameters are not likely to be granted by the Approval Authority. As previously stated and shown in Table 4-7, the Districts' proposed full scale treatment would not allow removal credits for cadmium and lead anyway. In the May 1980 document, however, EPA implies that other metals including mercury, arsenic, molybdenum, selenium, and chromium may be of concern due to human and animal health implications and that similar restrictive regulations might be imposed. Also, it is mentioned that metals such as copper, nickel, zinc, and boron cause plant phytotoxicity and perhaps should be severely regulated as well. As previously shown, granting of removal credits by the Districts based strictly on anticipated removal efficiencies might likely result in considerable capital equipment and O&M savings to affected industries. Consideration of sludge reuse, on the other hand, makes it doubtful--at least for the previously mentioned eleven metals and one organic constituent--that removal credits will be granted.

Furthermore, the May 1980 document indicates that EPA's philosophy regarding sludge contamination by toxic pollutants is to encourage the maximum level of industrial pretreatment that will minimize the need to classify sludges and restrict sludge use according to levels of toxic pollutants. If this philosophy prevails in the final regulations expected December 1981, all conservative toxic pollutants not destroyed by the POTW in its conveyance and treatment processes (e.g., heavy metals, PCBs, chlorinated hydrocarbons, persistent organics) will likely not be eligible for removal credits.

## Timing of Removal Credits for the Electroplating Industry

The pretreatment regulations for electroplaters become effective and enforceable in October 1982. Accordingly, most companies will need to know approximately 18 months prior to that date the standards for which they need to design equipment. By that date, it seems unlikely that significant full scale operational removal data at the JWPCP could be obtained; therefore, the limited pilot plant data presented herein would have to serve as the basis of any application for removal credits. Of course, additional samples between now and April 1981 could be obtained, especially on the two-stage centrifugation sludge dewatering process for which there are currently less than 12 data points. The reliability of these data to predict full scale operations remains unknown. EPA requirements specify that removal data must be based on normal influent and effluent conditions, and it is uncertain whether these data would be accepted, knowing their limitations in this respect.

EPA, however, has indicated that final rules regarding land application disposal of sludge, a process the Districts are committed to, will not be published until December 1981. These regulations may significantly affect removal credits allowable for non-biodegradable toxic constituents. If they are issued only 10 months prior to October 1982, electroplaters will not have adequate lead time for design and construction to meet the October 1982 deadline. Therefore, EPA has essentially negated any opportunity for the electroplating industry to seek removal credits, if indeed they will even be allowed to do so, by its own promulgation timetable.

## Conclusion

The removal credit provisions of the pretreatment program are intended to provide equity to industrial companies discharging to POTWs while insuring minimum duplication of treatment on the part of the POTW and industrial dischargers. Because of the requirements of uniformity of application of removal credits to all industrial users, a significant portion of the degradation of toxic organic compounds that occurs in the sewer system cannot be credited to industry. Within the Sanitation Districts of Los Angeles County, removal credits applied to toxic metals could result in many industrial companies not having to install pretreatment equipment to treat all wastewater flow, and considerable savings in capital expenditures could result. However, future removal credits at the POTW may likely decrease as influent concentration levels decrease, resulting in companies having to spend these capital funds anyway. Sludge disposal requirements regarding non-biodegradable toxic constituents may prohibit removal credits for industrial companies discharging these materials. The timing of these sludge requirements makes it unlikely the electroplating industry would be able to take advantage of removal credits, assuming any were allowed. It is estimated that the Sanitation Districts would need to expend between \$95,000 and \$200,000 to adequately characterize influent and effluent concentrations at the JWPCP once secondary treatment operations commence. The cost of these studies are not eligible for EPA grant funding. POTWs are likely to be reluctant to grant removal credits given the financial burden to prepare necessary removal data; the uncertainty as to whether removal credits would make any difference to industry regarding required pretreatment; and the ominous threat EPA holds over POTWs in making them equally responsible for the actions of industrial companies.

# CHAPTER 5

## ASSESSING ADMINISTRATIVE AND FINANCIAL NEEDS

### INTRODUCTION

Pretreatment is not new for most publicly owned treatment works operators, be they major metropolitan areas or small rural villages. Most entities have had some type of ordinance, if only general prohibitions, such as pH controls, for many years. Many of these regulations arose from obvious problems such as collapsed sewers due to damage from industrial discharges, treatment plant upsets, or in a few tragic cases, the actual death of sewer workers.

In most cases, the need for minimum regulations of these types was readily apparent to both the publicly owned treatment works policy body and to most responsible users of the system. The application and extent of the present Federally mandated pretreatment requirements, however, go well beyond that which is immediately obvious, and therefore may not be readily palatable to either the POTW policy body or the local industries. In this case, we are dealing with many exotic materials in barely measurable quantities, the effect of which on the POTW and environment is not as immediately apparent as a collapsed sewer or a major wastewater plant upset.

Despite these problems, many agencies have already developed industrial source control programs, and many others are beginning to do so. Of primary concern to POTWs engaged in this process are the associated costs of the program. This chapter attempts to assist POTWs in this regard by focusing on anticipated program development and administration costs as well as on possible cost recovery methods that can be used by local agencies to pay for their programs on an ongoing basis.

### LOCAL PRETREATMENT PROGRAM DEVELOPMENT COSTS

Local pretreatment program development costs will vary from POTW to POTW depending on such factors as previous efforts, facility size, and the number and type of industries tied into the municipal system. In addition, these costs will be affected by the extent to which EPA will require sampling and analysis for priority pollutants. Regardless of these cost variables, POTWs should anticipate significant capital expenditures as they develop a local pretreatment capability in accordance with legislative mandates and accompanying administrative requirements. With some limitations, however, these costs will be offset by the availability of 75% Federal construction grant funding, and POTWs are advised to review EPA's September 23, 1980, Municipal Pretreatment Program Guidance Package for detailed information regarding pretreatment grant application procedures and eligible costs for the development of an approvable municipal pretreatment program.

As a first step in assessing POTW start-up costs, POTWs should look at the overall functional responsibilities which they must meet for a pretreatment program. In a large POTW, many of these functions would be met by an entire division or department. In a small POTW, the same people might fulfill several of these responsibilities. The important factor is that each of the following responsibilities be addressed: sampling and industrial review; lab analyses, technical and engineering assistance; legal assistance; adjudication; and overall administration. Special equipment requirements fall into the areas of field sampling of industrial wastes and subsequent laboratory analyses.

## Sampling and Industrial Review

While the present Federal Pretreatment Regulations are based to a large extent on self-monitoring, there appears to be movement away from extensive self-monitoring on the part of the industries. At a minimum, it is essential that each of the "significant" industries in a POTW service area be sampled twice a year. Problem or recalcitrant industries require substantially more effort to locate and define the problem and develop a case for enforcement.

In any event, the provision of a field crew or crews is an essential part of POTW Pretreatment Program. Depending upon the nature of the activities to be performed by these people, their qualifications can vary. The people performing the field sampling and industrial review should be of sufficient qualification and training to be able to do an in-plant review of major process lines, discuss the processes and sampling techniques with plant management, install and maintain the sampling equipment, and retrieve the samples. A two-person crew is generally adequate for most sampling situations. It is desirable that at least one member of the crew have substantial field experience and advance education at the community college or college level.

It is estimated that approximately four (4) to eight (8) crew hours are required to contact a moderately complex industry, obtain information on its plant processing, flow characteristics, etc., and to actually install and maintain the monitoring equipment. More complex plants or enforcement problems would greatly magnify the time required.

After an industrial plant has been thoroughly reviewed, sampling routine and locations established, and compliance achieved, a two-person crew should be able to handle between 150 to 200 moderately complex industries with a twice a year sampling frequency. The cost for such personnel would vary, depending upon the wage scales in the area, but it is not unreasonable to assume that salaries in the range of $13,000 to $20,000, depending upon qualifications, experience, and responsibility are appropriate. Figure 5-1 summarizes the equipment necessary to outfit one (1) two-person industrial waste sampling crew. The prices indicated will vary from one area of the country to another, but these are reasonably representative of the costs that are involved.

As can be seen, the equipment needed for one POTW industrial waste pretreatment sampling and review crew will require approximately $24,950. Present Construction Grant Guidelines indicate that most of this equipment

FIGURE 5-1

## TYPICAL EQUIPMENT FOR POTW
## PRETREATMENT VAN (TWO-PERSON CREW)

| Equipment | Purchase Price |
|---|---|
| - Van w/2 way radio | $ 9,000 |
| - Gas Detector | 450 |
| - 2-Self cont. breathing units | 1,500 |
| - 4 portable samplers & bottle | 8,200 |
| - Portable pH meter | 800 |
| - 2-flow meters | 2,000 |
| - Flumes & Weirs | 1,600 |
| - Velocity meter | 600 |
| - Misc. Safety equipment | 400 |
| - Misc. Personnel equipment | 200 |
| - Misc. Tools & equipment | 200 |
| TOTAL | $24,950 |

cost, with the possible exception of the vehicle, should be eligible for 75% Construction Grant funding if needed for POTW Pretreatment Program development. This is not totally consistent with other guidelines in the Construction Grants program, however, in which special purpose vehicles integral to the operation of a Federally funded treatment works are grant eligible on a one-time basis. Certainly, vehicles used in a POTW sampling program are an integral and necessary part of a Federally funded treatment works.

## Lab Analyses

It can be safely assumed that nearly all POTWs have some laboratory capability in order to meet the needs of plant operation and NPDES reporting. Initiation of a POTW Pretreatment Program in accordance with U.S. EPA regulations will generally necessitate the addition of laboratory equipment and personnel. In addition, it may require the acquisition of additional laboratory space. The laboratory equipment required for a municipal wastewater treatment plant is generally standard. If there is a significant amount of industrial waste received by the facility, specialized equipment may be necessary.

Probably the most significant instrument for the determination of metals in water is the atomic absorption spectrophotometer (A.A.). There are more than thirty elements that can be analyzed by atomic absorption. According to the EPA publication titled Handbook for Analytical Quality Control in Water & Wastewater Laboratories, an experienced analyst can perform 150 analyses per day when no preliminary treatment of the sample is necessary. This number drops down to 60-80 per day when the metals analysis is performed following preliminary treatment of the samples. Consequently, if each sample were to be analyzed for 20 elements, the number of samples analyzed daily would be in the range of from three to seven. Figure 5-2 indicates that the cost of a good A.A. is in the order of $50,000. Supplies for the A.A. are approximately $3,000 per year. The cost of a qualified operator is assumed to range from $16,000 to $22,000 per year.

The normal methods for measuring organics in wastewater (BOD, TOC, and COD) do not provide any information on the molecular structure and quantity of a particular organic molecule. In order for a POTW to adequately administer an EPA approved pretreatment program, such capability will probably be necessary.

For these type of analyses, EPA recommends the use of a Gas chromatograph-Mass Spectrometer (GC-MS). Figure 5-2 indicates that a moderately sized GC-MS meeting EPA protocols costs approximately $120,000. Accessories and glassware cost approximately $5,000, and a year's supply of chemicals can be assumed to cost approximately $15,000. Based on four samples per day and 200 productive workdays, a GC-MS of the type noted above could handle approximately 800 samples per year. On each sample, as many as 120 compounds can be measured. Since the number may increase in the future, the computer associated with the GC-MS system has the capability to identify literally thousands of compounds.

It is assumed that an individual to operate a GC-MS would be compensated between $18,000 and $26,000 per year. In addition, at least two lab technicians in the $10,000 to $14,000 class would be needed to support the additional workload capable of being handled by the equipment.

As can be seen in Figure 5-2, the equipment requirements total approximately $193,500. This equipment should be eligible for 75% Construction Grant funding if normal grant requirements are met. In addition, the cost of constructing any additionally required laboratory space should also be eligible for 75% Federal funding.

## Technical & Engineering Assistance

Because of the complex nature of the Federal Regulations and the technical nature of the industries to be regulated, strong technical and engineering input into the POTW pretreatment program is necessary. In a relatively small POTW operation, this need could be met to a large degree by a manager of the POTW program if he has a strong technical background. In a larger operation, specialized individuals could work full time in the POTW Program. In other cases, technical input could be made from a central engineering pool. The important fact is that it be available.

The most significant reason for this is that a fair number of pretreatment cases may ultimately end up in litigation. Such litigation will be costly and may ultimately include the POTW, the State, EPA, the industry, and perhaps even a trade association or environmental group. It is, therefore, essential that the POTW program be on a firm technical base. Thus, additional technical input is especially critical if field crews of high school level education are utilized.

In addition, technical input is necessary to provide for review of facilities which industries propose to install in order to meet their pretreatment needs. While the regulations do not require POTWs to "approve" plans for pretreatment facilities, certainly some review is necessary to establish that industries are complying with their milestones and schedules. Such review also can be used to provide positive public relations with industry, particularly smaller ones, who may be proposing to install equipment which will not meet the job. Such approval should not guarantee that the facilities will meet the pretreatment standards, but rather indicate general conformance and include the stipulation that, if standards are not met, additional facilities will be needed. Attempting to assign a general cost to this element of the program is extremely difficult, since it largely depends upon the POTW structure and the going rate for engineers within the area.

## Legal Assistance

Because of the complex legal nature of the POTW pretreatment program, attempting to administer it without adequate legal assistance would be a serious mistake. The form of such legal assistance and its magnitude will, of course, vary from POTW to POTW.

In the case of large POTWs, the fulltime efforts of one or more members of the legal staff may be required ultimately in permit formulation,

FIGURE 5-2

# ADDITIONAL LABORATORY EQUIPMENT
# FOR
# POTW PRETREATMENT PROGRAM

| EQUIPMENT | PURCHASE PRICE |
|---|---|
| - Atomic Absorption Spectrophotometer (A.A.) | $ 50,000 |
| - Supplies for A.A. | 3,000 |
| - Gas Chromatograph - Mass Spectrometer (GC-MS) | 120,000 |
| - Accessories and Glassware for GC-MS | 5,000 |
| - Chemicals | 15,000 |
| TOTAL | $193,000 |

hearings, and litigation. In smaller agencies, part-time efforts of the City Law Director, Village Solicitor, or County Prosecutor will suffice. In some cases, outside counsel may be needed. Costs of legal services vary widely, depending on whether inhouse or outside counsel is utilized and upon the level of experience of the legal staff available.

## Adjudication

Unfortunately, the implementation of a POTW pretreatment program will not always be rosey. Disputes will arise between the POTW and the industry over interpretations and regulations. While every effort should be made to resolve these matters at the staff level, there will be the need for conflict resolution. Litigation should be the last resort due to the cost and time involved and the negative public relations impact.

Most sewer use codes provide for some type of due process procedure when a violation or dispute evolves. Its exact nature, of course, varies from POTW to POTW. In some cases, it may call for a hearing before a Commissioner or Utilities Director. In other cases, it might call for a hearing before the governing body of the sewerage agency or a subcommittee of the governing body. Other agencies have used the "hearing examiner" approach. Whatever approach is called for, a couple of cautions appear to be in order. First of all, it is essential that the person hearing the violation or dispute not be the person directly responsible for the pretreatment program. Such a person's objectivity would certainly be questioned. The other caution would be to be certain that the person or persons chosen to hear cases have sufficient time to hear the issues in a timely fashion. If a large number of cases are expected, there may be little practical choice but to go the hearing examiner route.

## Overall Administration

A POTW Pretreatment Program will require a significant amount of program administration. Record keeping, report preparation, review, and submittals will require the full time services of one or more high quality clerical individuals. In addition, an overall Program Manager is essential. Which of the functions outlined above would actually be under his administration, of course, varies from POTW to POTW. In all probability, he would not be directly responsible for legal functions. In a large POTW, administration would be a full time effort.

In addition to the day-to-day direction by a competent Program Manager, particularly in the initial stages of the program, involvement by the Agency head is critical. A successful pretreatment program necessitates a good public relations effort and the establishment of firm groundwork with the local industrial associations and Chamber of Commerce.

## Summary

The information presented in this section indicates that the actual capital costs relating to necessary monitoring, analysis, and laboratory equipment are significant. Assuming a POTW requires two field crews with two completely outfitted vans as well as one A.A. and one GC-MS, its total equipment cost would amount to $243,000.

POTWs will also have start-up costs associated with conducting an industrial survey, reviewing legal authority, evaluating possible revenue sources, determining technical information necessary to support local ordinances and standards, designing a monitoring enforcement program, and meeting public participation requirements. In Figure 5-3, cost estimates for accomplishing these tasks are presented for the Metropolitan St. Louis Sewer District, the Sanitary District of Rockford, and the Green Bay Metropolitan Sewerage District.

If you consider their anticipated start-up costs and add to those costs the equipment requirements noted above, their total costs for pretreatment program development may range from $300,000 for a moderately sized city such as Rockford to well over $500,000 for a city the size of St. Louis. It is also important to take into account that these agencies are, in effect, simply fine-tuning their existing industrial control programs to meet Federal requirements, with the result that agencies starting a pretreatment effort can anticipate even higher start-up costs.

## LOCAL PRETREATMENT PROGRAM ADMINISTRATION COSTS

Even more significant than program start-up costs are the projected annual costs that POTWs should anticipate for administering their programs. In contrast to development costs, which are cushioned by 75% Federal funding, municipal agencies will have to bear these ongoing administrative expenses on their own. This will include the high costs associated with maintaining field crews and a satisfactory laboratory capability. In addition, this will mean ensuring adequate technical, engineering, and legal assistance; providing an effective mechanism for the adjudication of disputes with industrial users; and overall administrative expenses, including the costs associated with record keeping and the preparation, review, and submission of required reports.

Figures 5-4 through 5-6 illustrate the magnitude of projected annual pretreatment expenditures. Figure 5-4, for example, projects the annual cost for each field crew when equipment life, maintenance, and personnel costs are calculated. As indicated, the bulk of the crew equipment will need replacement within five (5) years and such replacement is not eligible for grant funding. Hence, while the local share of outfitting an industrial waste pretreatment crew is approximately $13,000, its annual operating costs amount to over $55,000.

Figure 5-5 indicates a similar analysis for the additional laboratory equipment required. Again, it must be emphasized that these are incremental costs and assume an existing laboratory which requires no physical modifications. While the local cost of acquisition is approximately $45,000, the true annual cost is over $110,000. While these numbers will vary significantly from POTW to POTW, it must be realized that the program set-up cost is minimal in comparison to the annual operating cost.

For illustrative purposes, Figure 5-6 shows a hypothetical cost work-up of a POTW with 300 to 400 significant industries. These numbers are offered to generate thought and discussion and should not be cased in granite. However, a total annual cost of $380,000 does not seem unreasonable.

FIGURE 5-3

## ESTIMATED POTW PRETREATMENT PROGRAM DEVELOPMENT COSTS EXCLUSIVE OF EQUIPMENT AND FACILITY NEEDS

| TASK | Estimated Costs | | |
|---|---|---|---|
| | Metro. St. Louis Sewer District | Sanitary District of Rockford [3] | Green Bay Metro Sewerage District |
| 1. Identification and Survey of Industrial Users | $84,300[1] | $26,000 | $39,912 |
| 2. Review of Legal Authority | 9,000 | 14,000 | 21,964 |
| 3. Evaluation and Selection of Revenue Source | 10,000[2] | 5,500 | 4,789 |
| 4. Determination of Technical Information | 50,000 | 5,000 | 6,795 |
| 5. Design of Monitoring Enforcement Program | 158,000 | 4,300 | 98,157 |
| 6. Public Participation | 39,000 | 2,000 | 13,751 |
| | $350,300 | $56,800 | $185,368 |

[1] Identification previously done at District Expense.

[2] Part of user charge system evaluation presently underway.

[3] Extensive program development work has already been accomplished.

FIGURE 5-4

## ANNUAL COST PER 2 PERSONS

## POTW PRETREATMENT VAN

| EQUIPMENT | PURCHASE PRICE | ANNUAL O & M | ESTIMATED LIFE | ANNUAL COST |
|---|---|---|---|---|
| - Van w/2 way radio | $ 9,000 | $2,000 | 5 Yrs. | $ 3,800 |
| - Gas Detector | 450 | 100 | 5 Yrs. | 190 |
| - 2-Self Cont. Breathing Units | 1,500 | 60 | 10 Yrs. | 210 |
| - 4-Portable Samplers & Bottles | 8,200 | 400 | 5 Yrs. | 2,040 |
| - Portable pH Meter | 800 | 100 | 5 Yrs. | 260 |
| - 2-Flow meters | 2,000 | 100 | 5 Yrs. | 500 |
| - Flumes & Weirs | 1,600 | 0 | 20 Yrs. | 80 |
| - Velocity Meter | 600 | 20 | 5 Yrs. | 140 |
| - Misc. Safety Equipment | 400 | Replace as Needed | | 200 |
| - Misc. Personnel Equipment | 200 | Replace as Needed | | 200 |
| - Misc. Tools & Equipment | 200 | Replace as Needed | | 200 |
| Total Equipment = | $24,950 | $2,780 | | $ 7,820 |
| Field Personnel $16,000/yr. x 2 x 1.5 = | | | | $48,000 |
| Total Annual Cost per Field Crew | | | | $55,820 |

## FIGURE 5-5

## ADDITIONAL ANNUAL LABORATORY COST

## FOR

## POTW PRETREATMENT PROGRAM

| EQUIPMENT | PURCHASE PRICE | ANNUAL O & M | ESTIMATED LIFE | ANNUAL COST |
|---|---|---|---|---|
| - Atomic Absorption Spectrophotometer (A.A.) | $ 50,000 | $ 1,000 | 10 Yrs. | $ 6,000 |
| - Supplies for A.A. | 3,000 | 3,000 | 1 Yr. | 3,000 |
| - Gas Chromatograph Mass Spectrometer (GC-MS) | 120,000 | 3,500 | 10 Yrs. | 15,500 |
| - Accessories and Glassware for GC-MS | 5,000 | 5,000 | 1 Yr. | 5,000 |
| - Chemicals | 15,000 | 15,000 | 1 Yr. | 15,000 |
| TOTAL EQUIPMENT = | $193,000 | $21,000 |  | $ 44,500 |
| + 1 A.A. Operator = | $ 20,000/yr. x 1.5 |  |  | $ 30,000 |
| + 1 GC-MS Operator = | $ 24,000/yr. x 1.5 |  |  | $ 36,000 |
| TOTAL ADDITIONAL ANNUAL COST |  |  |  | $110,500 |

## FIGURE 5-6

## HYPOTHETICAL POTW PRETREATMENT PROGRAM

## ANNUAL COST

| FUNCTION | ANNUAL COST |
|---|---|
| - Sampling Vans & Equipment (2) | $ 15,640 |
| - Sampling Crews | |
| 4 people x 16,000 x 1.5 | 96,000 |
| - Additional Lab Equipment & Supplies | 44,500 |
| - Additional Lab Personnel | |
| 1 A.A. Operator x 20,000 x 1.5 | 30,000 |
| 1 GC-MS Operator x 24,000 x 1.5 | 36,000 |
| 2 Technicians x 12,000 x 1.5 | 36,000 |
| - Technical & Engineering Assistance | |
| 1 person x 26,000 x 1.5 | 39,000 |
| - Legal Assistance | |
| 1 person x 26,000 x 1.5 | 19,500 |
| - Administration | |
| 1 Manager x 30,000 x 1.5 | 45,000 |
| 1 Clerk x 12,000 x 1.5 | 18,000 |
| TOTAL ANNUAL COST | $379,640 |

# COST RECOVERY METHODS

As can be seen, the annual cost of a POTW Pretreatment Program can amount to a substantial sum of money. At this point in time, there appears to be some ambiguity on what EPA regulations may or may not permit as a cost recovery system. A strong case can be made, however, for several different cost recovery methods, depending upon the characteristics of the POTW's users and its user charge system. The POTW should be able to utilize whatever system is equitable and publicly acceptable. The following possible POTW Pretreatment Cost Recovery Methods are offered for consideration.

## Charge All Users

This is the simplest method of cost recovery, particularly if an ad valorem tax user charge system is utilized. Cost accounting and records keeping are greatly simplified.

A broad justification can be made that all users of the system benefit from an effective POTW Pretreatment Program. Assuming that no extensive additional sampling or enforcement is required against any particular industry, broad equity can be claimed. If, however, problems develop with some industries which require extensive monitoring and enforcement, then inequities will result.

## Charge All Industrial Users

A stronger case can be made that only industry should pay for a POTW Pretreatment Program. The question then must be asked should industry as stipulated in the SIC Codes included in the Federal Regulations bear the burden or only those with industrial discharge.

Charging only industry under an ad valorem tax system is more complicated since some type of industrial special charge would be required. Under a water use based user charge system, the charge-back system would be greatly simplified. As in the "Charge All Users" scenario, inequities result if some industry requires special monitoring or enforcement.

## Charge Significant Industrial Users

Under this system, only those industries which actually have discharges would be charged. The break-point is obviously controlled by the final turn that the Federal Regulations take in terms of industries and pollutants to be covered. The "significant" break-point should track with that ultimately defined by U.S. EPA.

Again, this system presents more complexity to an ad valorem system since some type of special charge would be needed. A water consumption based or sewer discharge based user charge system should be able to readily accommodate such a cost recovery system.

## Charge Base Cost to All Users with Incremental Cost to Problem Industrial Users

This system of cost recovery has the merits of the "Charge All Users" scenario in terms of ease of administration under an ad valorem system, with the added advantage of making problem dischargers pay the cost for extensive monitoring or enforcement activities.

Under this system, great care would have to be taken in establishing the threshold level of POTW activity which results in an industry being labeled "problem." Further, extreme care in cost accounting would be necessary to be certain that charges levied can be substantiated in court, if necessary.

This system should be capable of ready administration under either a water consumption base or sewage flow use charge system.

### Charge Base Cost to All Industrial Users with Incremental Cost to "Problem" Industrial Users

On the surface, this system appears to provide for maximum equity since only industry pays and "problem" industries pay for additional work generated on their behalf. As in the previous scenario, care must be taken in defining the "threshold" after which an industry is labeled a problem. Close cost accounting is also necessary.

For a water consumption based or sewage flow based user charge system, administration should be accomplished with little difficulty. For an ad valorem system, additional administration and billing would be required.

### Other Combinations

After reviewing the above, it is apparent that other combinations can come to mind based on the particular POTW's circumstances. The above are offered not as the "only" methods, but rather to stimulate thought on other alternatives.

## CONCLUSION

While POTW Pretreatment Program development costs are significant, their grant eligibility makes them more palatable to municipal agencies. Development costs, however, are quickly dwarfed by annual operating costs which municipal agencies must bear without the benefit of Federal largesse. As with inflation and other demands for public dollars, these costs will become more difficult to justify, let alone obtain, with the result being that the maintenance of high quality POTW pretreatment programs may be more difficult to achieve. This will be particularly the case where environmental benefits are not readily apparent and the economic impact on local industry is severe.

POTW Pretreatment Programs will require a substantial amount of hardware and trained personnel. The amount of sophisticated laboratory hardware required by POTWs will depend on the extent to which they will have to perform priority pollutant analyses. The number of significant industries, the extent of industrial self-monitoring, and the number of enforcement actions will greatly impact both the hardware and personnel categories and hence operating costs of POTW Pretreatment Programs. Legal costs may also be substantial.

Several methods of funding a POTW Pretreatment Program are possible. The exact method should be determined by the statutes governing the POTW since institutional methods vary widely across the country.

# CHAPTER 6

## DESIGNING A MONITORING ENFORCEMENT PROGRAM

### INTRODUCTION

To obtain an approved program, which is essential for the POTW to receive Federal grants, the POTW must develop procedures which will ensure industrial compliance with Prohibited Discharge Standards and Categorical Pretreatment Standards tailored to each regulated industrial subcategory. The categorical standards to be developed will be technology based with special emphasis on the control of toxic pollutants.

To receive administrative authority, the POTW needs to be able to locate and identify all industrial users which may be subject to pretreatment regulations and to identify the character and volume of pollutants contributed by industrial users (See Chapter 2). In addition, the POTW has to notify industrial users of applicable pretreatment standards and other regulatory requirements, receive and analyze self-monitoring and other reports, sample and analyze effluents from regulated industrial processes, and investigate instances of noncompliance with standards and regulations. The POTW is responsible for enforcement of all national standards as well as any local or State standards. If the POTW doesn't enforce the standards, violations are subject to enforcement actions brought by the U.S. EPA against both the POTW and the violating industrial users.

Paperwork plays an exceedingly important role in our "civilized" society, and pretreatment is obviously no exception to the paperwork syndrome. Section 403.8 of the Regulations enumerates the various documentation required of the POTW program including ordinances, permits, industrial notices, surveillance reports, industrial waste surveys and other paperwork necessary to comply with the Pretreatment Regulations. Section 403.12 enumerates additional paperwork requirements for the POTW and for industrial users. Such documents as the Initial 180-Day Facility Report (baseline monitoring report), compliance schedules, self-monitoring, and spill/slug discharge reports plus other associated correspondence are required of industry. Such reporting and documentation materializes as the familiar "governmental form."

For any program with national coverage, such as pretreatment, one expects the development of universal forms, the purpose of which would be to solicit required information in a logical sequence and ensure uniformity in data presentation from all sources thereby enabling systematic and efficient review. However, as of this date, no nationally developed pretreatment program forms that could be utilized nationwide by local control authorities and industries are available.

The lack of nationally developed forms has forced individual POTWs to develop pretreatment program reporting formats that can be used to provide the information required by EPA regulations. This chapter relies on the excellent formats developed by the Metropolitan St. Louis Sewer District to fulfill all industrial data acquisition and reporting requirements, including the Initial 180-day Facility Report, compliance progress reports, and self-monitoring and spill/slug discharge reports. In addition, since the electroplaters are the first industrial subcategory to be saddled with pretreatment reporting requirements, information required of electroplating industries will be utilized throughout this chapter to exemplify the use of forms and reporting requirements.

## COMMENCEMENT OF INDUSTRIAL COMPLIANCE

### Implementation Schedule

Once final pretreatment standards have been published for an industrial subcategory, time is allotted for industry evaluation of compliance needs, reporting of facility compliance status, and installing whatever processes or procedures are necessary to achieve compliance. A generalized pretreatment compliance implementation schedule showing the steps toward pretreatment compliance is presented in Figure 6-1. Normally, 36 months are provided after the effective date of a regulation for industry to achieve compliance. When final regulations for an industrial subcategory are published in the Federal Register, a minimum of thirty (30) days separate the effective date of the regulation from its publishing date. The compliance clock starts on the effective date. Notification from the POTW should be received shortly thereafter.

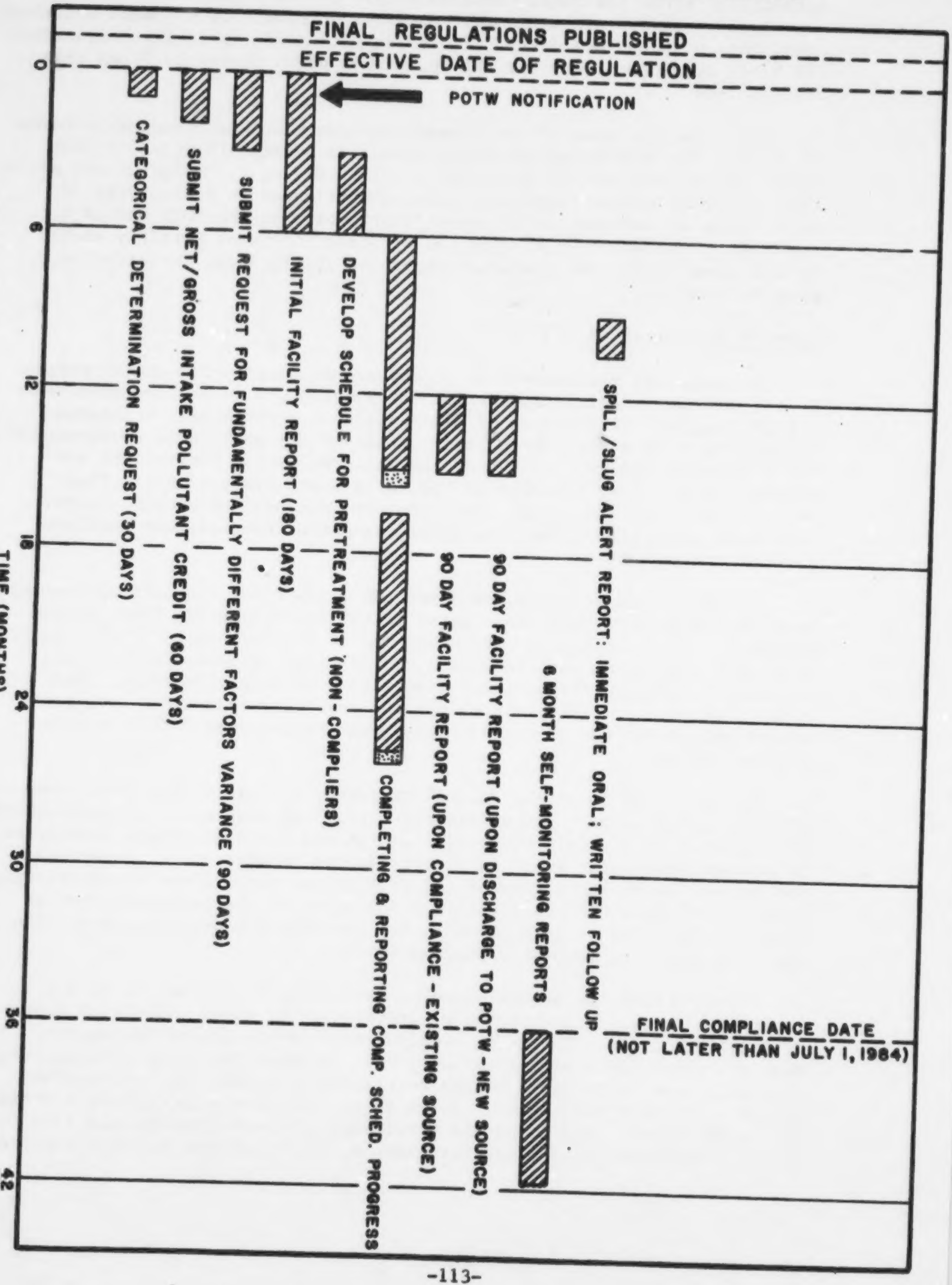
An industry has 30 days to file a categorical determination request and 60 days for a net/gross intake pollutant credit. If a priority pollutant is present in the raw water supply, an allowance for that pollutant may be made in the standards if intake water is drawn from the same body of water to which the POTW discharges and other requirements are met. From the effective date, an industry has ninety (90) days to request a fundamentally different factors variance. Anyone believing that factors relating to an industrial user are fundamentally different from the factors considered during development of a categorical pretreatment standard may request a fundamentally different factors variance under Section 403.13 of the General Pretreatment Regulations. Because of the complexity associated with applying for this variance, this section of the regulation and proposed amendments which appeared in the January 16, 1980, Federal Register should be reviewed in detail.

Within 180 days after the effective date of the regulation, an initial baseline monitoring report should be filed with the Control Authority. For those industrial users not in compliance, a pretreatment compliance schedule should be developed and included as a part of the initial baseline monitoring report. A maximum of three years is allotted from the effective date of the regulation to enable those industries not in compliance to develop and install systems or initiate procedures which will enable them to meet the standards. During this implementation phase, progress reports are required to document compliance activity.

Within ninety (90) days after reaching compliance for an existing source and within ninety (90) days after commencing discharge to a POTW

FIGURE 6-1

## STEPS TOWARD PRETREATMENT COMPLIANCE



INDUSTRIAL PRETREATMENT COMPLIANCE IMPLEMENTATION SCHEDULE by a new source, a final compliance report must be submitted to the Control Authority. After the final compliance date of the regulations, the industrial users must initiate six-month self-monitoring reports to document continued compliance with the standards. For toxic pollutants (priority pollutants) the final compliance date for all industrial users cannot be later than July 1, 1984.

The effective date of the General Pretreatment Regulations was August 25, 1978. The Prohibited Discharge Standards became effective on that date. It is important to note that a spill or slug discharge of any pollutant including oxygen demanding pollutants released in a discharge of such volume or strength as to cause interference in the POTW should be reported. A verbal contact with the affected treatment facility should be made immediately and a written report of the incident forwarded as soon as feasible.

## Industry Notification

An essential requirement of an approvable local pretreatment program is the ability to notify industrial users which are to be regulated under the pretreatment regulations of all applicable pretreatment standards. Industry must be given timely notification of any applicable requirements under Sections 204 (b) and 405 of the Water Pollution Control Act and Sections 3001, 3004, and 4004 of the Solid Waste Disposal Act. These sections refer to industrial cost recovery, disposal of sewage sludge, hazardous waste identification, hazardous waste treatment and sanitary landfills, respectively.

The first industrial subcategory for which final categorical pretreatment standards have been promulgated is the Electroplating Point Source Category. Final standards were published in the September 7, 1979, Federal Register. Amendments were made as a result of an agreement entered into by the U.S. EPA and the National Association of Metal Finishers, plus others, on March 25, 1980, and change the numerical values for some parameters and revoke the 30-day averaging requirements and establish 4-day average limits.

In the March 25, 1980, Federal Register, a facility which performs electroplating as only one of several operations necessary for manufacture of a product at a single physical location and has significant quantities of process wastewater from non-electroplating manufacturing operations was defined as an "integrated facility." Also, one or more electroplating process effluents must be combined prior to or at the proposed point of treatment with one or more plant sewers carrying process wastewater from non-electroplating manufacturing operations.

Until a POTW has an EPA approved pretreatment program, it is not legally obligated to notify the electroplaters or other industrial users of final standards, changes in requirements, or regulatory amendments. However, since POTWs will eventually have an approvable pretreatment program, they will want to maintain a good working relationship and cooperative spirit with their industries. POTWs should consider establishing a notification procedure. Utilizing its previously prepared computerized list of SIC identified industries, for example, St. Louis MSD mailed a notification packet to all industries actively engaged in electroplating. The packet consisted of a letter of transmittal explaining industry's obligation to comply with General Pretreatment Regulations, a summary of categorical standards, and other essential information contained in the September 7, 1979, Federal Register, and an example of a format for the required Initial 180-Day Facility Report (baseline monitoring report). The District also held meetings to discuss in detail the Pretreatment Regulations and answer any questions generated thereby.

Since MSD's initial notification on January 7, 1980, two subsequent mailings have been sent to electroplaters to reflect regulatory changes and proposed amendments. In the March 26, 1980, Federal Register, deadlines from categorical determination requests, fundamentally different factors variance requests, submission of the baseline monitoring report, and net/gross credit requests were extended. The regulatory time requirements for the electroplaters was restarted on April 9, 1980, and consequently the new date for submitting the Initial 180-Day Facility Report (baseline monitoring report) is October 6, 1980. The final compliance date of October 12, 1982, has not been extended, however. Guidance on the sampling required for preparation of the baseline monitoring report was also included in the March 26th publication.

Based on the District's experience in electroplater notification, St. Louis foresees numerous administrative problems associated with the notification of some 3,000 plus industries to be regulated by pretreatment standards. Numerous modifications, additions, and amendments to the 34 industrial subcategory standards plus hazardous and solid waste regulations are of particular concern.

## INITIAL 180-DAY REPORT (BASELINE MONITORING REPORT)

### Pretreatment Standards Influence

Standards specific to the industrial subcategory to be regulated will be published in their proposed form in the Federal Register and time allotted for public comment prior to finalizing. Since at this writing the Electroplating Point Source Category Standards are the only standards published to date in "final" form, they will be utilized throughout this chapter to exemplify U.S. EPA standard setting protocol and compliance procedures.

The U.S. EPA selected eight electroplating processes which must comply with pretreatment standards. These processes are as follows:

- Electroplating of common metals. (Subpart A).
- Electroplating of precious metals. (Subpart B).
- Electroplating of specialty metals. (Subpart C, reserved).
- Anodizing ferrous or non-ferrous metals. (Subpart D).
- Coating, including chromating, phosphating, or emersion.
- Plating of ferrous or non-ferrous materials. (Subpart E).
- Chemical milling or etching of ferrous or non-ferrous materials. (Subpart F).
- Electroless plating. (Subpart G).
- Manufacturing of printed circuit boards. (Subpart H).

An important concept with regard to the above process list should be emphasized. Each process must be regulated and comply with pretreatment standards. The standards do not apply at the point of discharge into the public sewer system unless conditions exist which ensure against undefined dilution from sanitary wastewaters, cooling waters, or other wastewater sources.

Pretreatment standards for the Electroplating Point Source Category are based on process wastewater flows above and below 10,000 gallons per day. A summary of those standards is presented in Table 6-1. It should be noted for those facilities discharging less than 10,000 gallons per day of process wastewater, only cyanide, which is amenable to chlorination, lead, and cadmium need be regulated. For those facilities discharging more than 10,000 gallons per day, several other metals are added to the analytical list. In addition, for plants discharging more than 10,000 gallons per day of process wastewater, two options to the standards are allowed, if agreeable to both the POTW and the industrial user. In the first option, the industrial user must reduce hexavalent chromium to the trivalent form and must neutralize the wastewater using calcium oxide or calcium hydroxide and is prohibited from using strong chelating agents. The second option is based on mass standards which allow a pollutant concentration to be discharged based on each square meter of material processed. To utilize this option, the industry must, of course, keep accurate records of surface area processed and wastewater flow for comparison with analysis of effluent samples collected during the operations. Printed circuit board manufacturers have been given mass standards which differ from those for other electroplaters.

Standards for various industrial subcategories will vary depending upon the type of manufacturing or service activity and the type of pollutants regulated from that activity. The electroplating standards are, however, a reasonable barometer of U.S. EPA standard-setting thinking.

## Sampling and Analytical Needs

Sampling and analysis of the discharge from each regulated process are requirements of the Pretreatment Regulations. The frequency of monitoring will be prescribed in the applicable pretreatment standard for each industrial subcategory. EPA, however, is considering other approaches to monitoring. All analyses are to be performed in accordance with procedures established in 40 CFR Part 136 and amendments thereto. Where 40 CFR Part 136 does not include a sampling or analytical technique for the pollutant in question, the regulations require that sampling and analysis be performed in accordance with the procedures set forth in the U.S. EPA publication, "Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants" (April 1977), or other sampling and analytical procedures approved by the Administrator.

Guidelines concerning the frequency and duration of sample collection for preparation of the baseline monitoring report were published in the March 26, 1980, Federal Register. As stated therein, "samples shall be representative daily composite samples collected over a single operating day; three samples within a two week period are sufficient for processes with flow rates less than 250,000 gallons per day; six samples within

## TABLE 6-1

## CATEGORICAL PRETREATMENT STANDARDS FOR ELECTROPLATING POINT SOURCE CATEGORY (PSES) (6)

| PARAMETER | BASIC UNDER 10,000 GPD (mg/l) (SUBPARTS A,B,D,E,F,G & H) | | BASIC OVER 10,000 GPD (mg/l) (SUBPARTS A,B,D,E,F,G & H) | | OPTION I (1)(7) OVER 10,000 GPD (mg/l) (SUBPARTS A,B,D,E,F,G&H) | | OPTION II (2) OVER 10,000 GPD mg/m$^2$ (SUBPARTS A,B,D,E,F & G) | | OPTION II (2) OVER 10,000 GPD mg/m$^2$ (SUBPART H) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 DAY MAX. | 4 DAY AVG. | 1 DAY MAX. | 4 DAY AVG. | 1 DAY MAX. | 4 DAY AVG. | 1 DAY MAX. | 4 DAY AVG. | 1 DAY MAX. | 4 DAY AVG. |
| Cyanide (Amenable to Chlorination) | 5.0 | 2.7 | - | - | - | - | - | - | - | - |
| Cyanide (Total) | - | - | 1.9 | 1.0 | 1.9 | 1.0 | 74 | 39 | 67 | 89 |
| Copper | - | - | 4.5 | 2.7 | - | - | 176 | 105 | 401 | 241 |
| Nickel | - | - | 4.1 | 2.6 | - | - | 160 | 100 | 365 | 229 |
| Chromium | - | - | 7.0 | 4.0 | - | - | 273 | 156 | 623 | 357 |
| Zinc | - | - | 4.2 | 2.6 | - | - | 164 | 102 | 374 | 232 |
| Lead | 0.6 | 0.4 | 0.6 | 0.4 | 0.6 | 0.4 | 23 | 16 | 53 | 36 |
| Cadmium | 1.2 | 0.7 | 1.2 | 0.7 | 1.2 | 0.7 | 47 | 29 | 107 | 65 |
| Total Metals (3) | - | - | 10.5 | 6.8 | - | - | 410 | 267 | 935 | 609 |
| Silver (4) | - | - | 1.2 | 0.7 | - | - | 47 | 29 | - | - |
| TSS (5) | - | - | - | - | 20.0 | 13.4 | - | - | - | - |
| pH (Std. Units) | - | - | - | - | 7.5 to 10.0 | | - | - | - | - |

(1) Users of this plan must reduce hexavalent chromium to the trivalent form and must neutralize wastewater using Calcium Oxide (or hydroxide) and are prohibited from using strong chelating agents.
(2) Mass based standards, with printed circuit board values omitted.
(3) Total of Cu, Ni, Zn, and Total Cr. does not include Cd or Pb.
(4) Applies only to precious metal plating.
(5) Replaces limitation for Cu, Ni, Cr, Zn, and total metals. (TSS = total suspended solids)
(6) PSES = Pretreatment standards for existing sources (compliance by October 12, 1982)
(7) No removal credits for these standards allowed.

a two week period are sufficient for processes with greater flow rates."

For those industrial users required to comply with the Electroplating Point Source Category Standards, the collection and analysis of representative samples of process wastewaters is to be conducted no less frequently than indicated in the following self-monitoring schedule:

| Total Process Flow Gallons/Day | Frequency of Monitoring | No. of Analyses Per 6 Month Period |
|---|---|---|
| 0 - 10,000 | once/month | 6 |
| 10,000 - 51,000 | twice/month | 12 |
| 51,000 - 102,000 | once/week | 26 |
| 102,000 - 255,000 | twice/week | 52 |
| over 255,000 | thrice/week | 78 |

It should be noted that all process wastewaters regulated by the various subparts of the pretreatment standards shall be added together when determining the frequency of monitoring and the data generated from monitoring must be retained for at least three years or longer if litigation is pending. Composite samples, either flow or time proportioned, may be utilized to document and evaluate compliance with the standards.

Section 403.12 (n) (1) of the regulations requires that any industrial user subject to reporting requirements shall maintain records of all information resulting from any monitoring activity. Such records shall include for all samples:

- The date, exact place, method, and time of sampling and the names of the persons taking the samples;
- The dates analyses were performed;
- Who performed the analyses;
- The analytical techniques/methods used;
- The results of the analyses.

In St. Louis, 24-hour time composites will be collected and the pollutant concentrations measured in the process effluent will be compared with one-day maximum values listed in the standards. In its anticipated local program, the District will randomly sample and analyze the effluent from regulated processes and utilize data generated by automatic samplers. The District is considering unannounced grab sampling as an enforcement aid because of the numerous industries it has within its jurisdiction. A pollutant concentration equal to three times the one-day maximum value would be cause for more comprehensive sampling at the particular industry.

Previous to the promulgation of pretreatment regulations, municipal pollution control agencies collected samples from industry in the industrial sewer just prior to its discharge into the public sewer system. With the advent of process oriented technology based standards for regulated processes, such sampling now becomes inappropriate because of the dilution from nonregulated processes, sanitary sources, cooling waters, and other waters. In the proposed amendments to the General Pretreatment Regulations published in the October 29, 1979, Federal Register, a formula for determining an equivalent concentration of a pollutant when mixed with unregulated wastewaters was presented in Section 403.6 (e). As of this writing, this formula has not been adopted.

An example of an industry with three manufacturing processes is depicted schematically in Figure 6-2. Various possibilities associated with monitoring regulated processes exist. The diagram used here is to show typical sampling conditions that may be encountered and the sampling methodology required where concentration standards are utilized. Two general sampling conditions can exist: one, when the process wastewaters are discharged untreated, and two, when the wastewaters are discharged after pretreatment.

First, let us evaluate the condition where process wastewaters are untreated prior to discharge to the municipal sewer.

1. Process wastewaters discharged untreated (refer to Figure 6-2):

A. Case 1

Conditions: Processes A, B, & C are regulated by the same set of standards and the cooling water and sanitary sources tie into the building sewer between sampling points 1 and 2 as shown (SP1 and SP2).
Comment: Sampling at SP1 requires flow measurement for all sources and equivalent concentrations calculated for all parameters. This location would be a poor sampling choice since equivalent concentrations of pollutants could be below the detectable limit. Sampling at SP2 would be acceptable provided all three processes are regulated under the same set of standards.

B. Case 2

Conditions: Processes A, B & C are regulated processes except that Process C standards differ from those of A and B.
Comment: Sampling at SP1 is poor choice for reasons expressed in Case 1 above. Sampling at SP2 requires equivalent concentrations to be calculated for those dissimilar pollutants contributed by each process and flow measurement. If possible, sampling of each individual process effluent should be conducted.

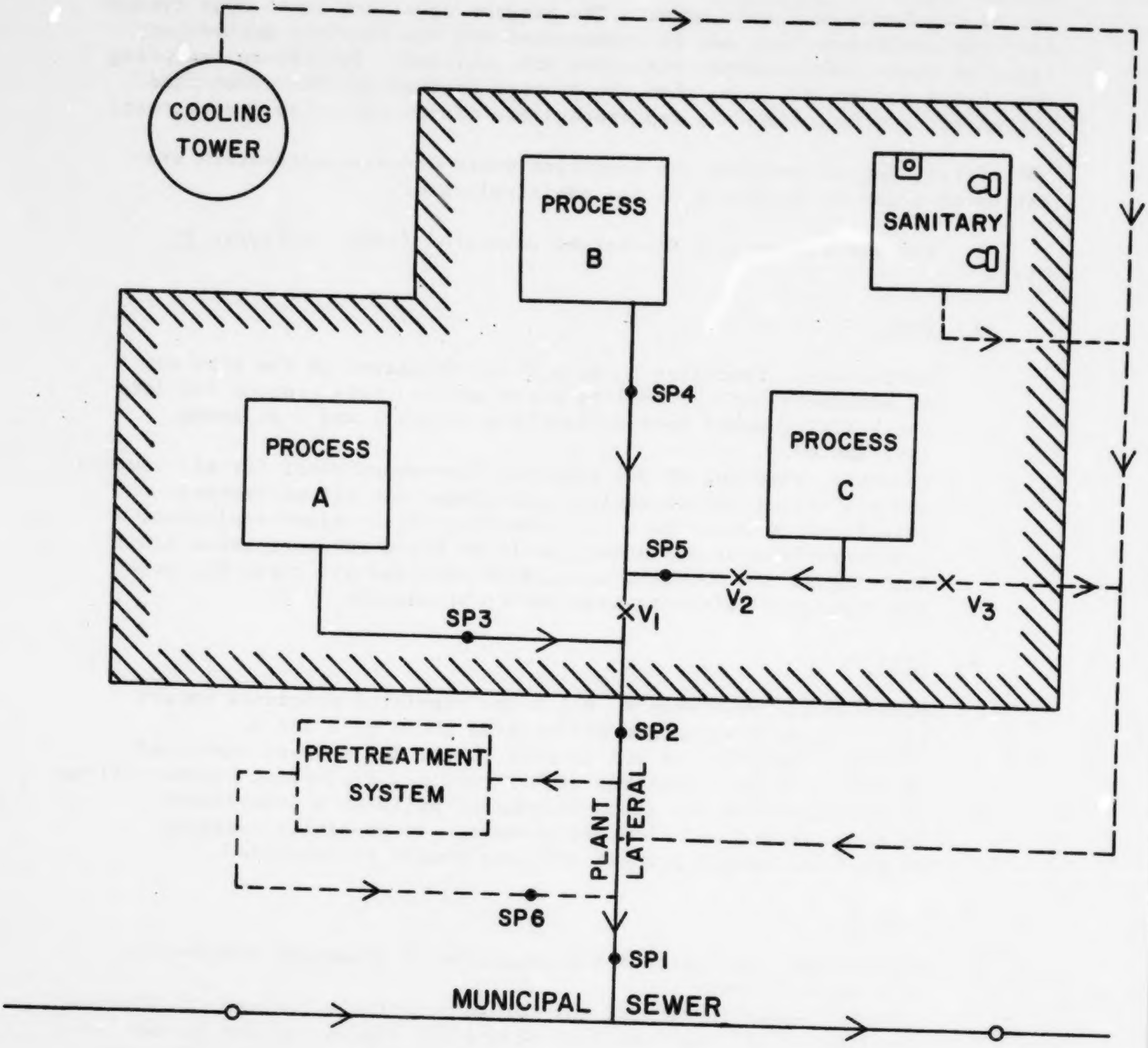
C. Case 3

Conditions: Processes A & B regulated by standards and Process C is unregulated.
Comment: Sampling at SP1 may not be acceptable because of dilution. Sampling at SP2 requires that equivalent concentrations be calculated due to dilution of Processes A & B by waste from Process C and flow measurement. Sampling of regulated Processes A & B at SP3 and SP4 would suffice. Possibly more desirable would be the rerouting and combining of wastewaters from Processes A & B to a single sampling point.

D. Case 4

Conditions: Process A regulated by standards and Processes B & C unregulated.
Comment: Sampling at SP1 unadvisable for reasons stated previously. Sampling at SP2 poor choice since considerable dilution may occur

FIGURE 6-2


COOLING TOWER
PROCESS B
SANITARY
SP4
PROCESS A
PROCESS C
SP5
$V_2$
$V_3$
SP3
$V_1$
SP2
PRETREATMENT SYSTEM
PLANT LATERAL
SP6
SP1
MUNICIPAL SEWER

INDUSTRIAL WASTEWATER FLOW DIAGRAM

and wastewater flow from Processes A, B, & C would require measurement during sampling. Best choice of sampling would be at SP3 whereby the effluent concentrations could be compared directly with the standards.

As suggested from above comparisons, it may be advisable and more economical to install sampling points on regulated process effluents and combine effluents where feasible to eliminate dilution from other wastewater sources and minimize operational monitoring costs. If a pretreatment system has been installed to remove priority pollutants prior to discharge to the municipal sewer, additional sampling problems may be encountered.

The second condition involves the situation where wastewaters are discharged after treatment.

2. Process wastewaters treated prior to discharge (refer to Figure 6-2):

A. Case 1

Conditions: Processes A, B, & C regulated by same set of standards.
Comment: Sampling at SP2 for influent concentrations and at SP6 for effluent concentrations would provide data for evaluating treatment removal efficiency and determining compliance with discharge standards. Sampling at SP1 would be affected by dilution from cooling water and sanitary wastes and probably unacceptable.

B. Case 2

Conditions: Processes A & B regulated under one set of standards and Process C under another set.
Comment: If same treatment system can be utilized for all process wastewaters then SP6 could be used to document compliance with standards. If process wastewaters are incompatible for treatment, a separate pretreatment system may have to be installed for Process C and a sampling point for the treated effluent established.

C. Case 3

Conditions: Processes A & B regulated and Process C unregulated.
Comment: The effluent from Process C may have to be rerouted to prevent dilution of influent to the pretreatment system designed for Processes A & B. This condition is depicted in Figure 6-2 by the use of valves, V2 (closed) and V3 (open), to divert the unregulated process wastewaters. Pretreatment system evaluation and compliance sampling could be accomplished by sampling at SP2 and SP6.

D. Case 4

Conditions: Process A regulated and Processes B & C unregulated.
Comment: If economically feasible Processes B & C effluents should be rerouted away from the pretreatment system to control

dilution and increase treatment efficiency. This is depicted in Figure 6-2 by valves, V1 (closed) and V2 and V3 (open). Pretreatment sampling at SP3 and SP6 would provide the necessary analytical information.

Sampling of regulated processes can be quite complex, particularly in older industrial facilities and if mass standards are used. It would be wise to thoroughly evaluate the industrial sewer system and possible wastewater sampling points as suggested by the Industrial User Pretreatment Questionnaire discussed in Chapter 2 before embarking on a compliance sampling program.

The more exotic organic priority pollutants have not had limits established in the categorical standards published to date. When limits are placed on such materials, the analytical problems and sample collection requirements will become considerably more complex and costly. Special attention will have to be given to the type of sample collection apparatus and containers used. It is best to consult U.S. EPA publications pertaining to sample collection and analyses of priority pollutants and abide by the listed recommendations.

## Report Format

In the two previous sections, information has been presented concerning the influence of pretreatment standards and sampling collection and analysis on compliance reporting. This section is devoted to presenting a format for reporting such compliance information to the Control Authority. The title selected for the report is the Initial 180-Day Facility Report, referred to in the Compliance Implementation Schedule discussed previously (see Figure 6-1). Section 403.12 of the General Pretreatment Regulations defines the information to be included in the report. The report is to be submitted to the Control Authority which is the POTW if the POTW's pretreatment program submission has been approved. If the POTW does not have pretreatment program approval, then the report should be sent to the U.S. Environmental Protection Agency Regional Office, Division of Enforcement.

A general format for the Initial 180-Day Facility Report prepared by the Metropolitan St. Louis Sewer District is shown in Figure 6-3. The report will vary slightly in format based on the nature and concentration of pollutants applicable to a specific industrial subcategory. Since standards for the Electroplating Point Source Category have been finalized and the electroplaters are the first industrial groups required to submit the report, Item 5, "nature and concentration of pollutants" has been tailor-made to fit their reporting needs. Existing sources are required to submit the following information:

1. The name and address of the industrial user.
2. The location of such industrial user.
3. The nature, average rate of production, and standard industrial classification of the operation carried out by such industrial user.
4. The average and maximum flow of the discharge from such industrial user to the POTW in gallons per day.

FIGURE 6-3

## INDUSTRIAL USER PRETREATMENT PROGRAM (40 CFR 403)
ELECTROPLATING CATEGORY
Initial 180-Day Facility Report [ 403.12(b) ]

1. COMPANY NAME: ____________________
COMPANY MAILING ADDRESS: ____________________

2. FACILITY PREMISE ADDRESS: ____________________ ZIP CODE __________
____________________ ZIP CODE __________

3.

| INDIVIDUAL PROCESS DESCRIPTION | SIC CODE | AVERAGE PRODUCTION ($M^2$/DAY) |
|---|---|---|
| | | |
| | | |
| | | |

4. WASTEWATER FLOWS: (GALLONS/DAY)

| SIC PROCESS | DISCHARGE AVG. | DISCHARGE MAX. | COOLING WATER AVG. | COOLING WATER MAX. | SANITARY AVG. | SANITARY MAX. | TOTAL PLANT AVG. | TOTAL PLANT MAX. |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

5. NATURE AND CONCENTRATION OF POLLUTANTS: (Concentration in mg/l)
Note: attach additional sheets if needed

SIC PROCESS NO. ________

| Max. For Any One Day | Ag | Cd | CN A | CN T | Cr T | Cu | Ni | Pb | pH | Tss | Tm | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Standard | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | |
| Equiv. Concen. | | | | | | | | | | | | |

SIC PROCESS NO. ________

| Max. For Any One Day | Ag | Cd | CN A | CN T | Cr T | Cu | Ni | Pb | pH | Tss | Tm | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Standard | | | | | | | | | | | | |
| Actual | | | | | | | | | | | | |
| Equiv. Concen. | | | | | | | | | | | | |

6. CERTIFIED STATEMENT:
Pretreatment standards for this company (item 1 above) are ☐ are not ☐ being met on a consistent basis. Additional operation and maintenance (O & M) required to insure compliance is as follows: ____________________

Additional pretreatment required to meet standards is as follows: ____________________

I have personally examined and am familiar with the information submitted in this document and attachments. Based upon my inquiry of those individuals immediately responsible for obtaining the information reported herein, I believe that the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

____________________ __________
Signature of Authorized Representative (Date)

____________________ __________
Signature of Qualified Professional (Date)

7. ESTIMATED SCHEDULE OF COMPLIANCE (ATTACH ON EXTRA SHEET)
[See June 26, 1978 Federal Register Sec. 403.12 (b) (7) & (c)]

## EXAMPLE OF INITIAL 180-DAY FACILITY REPORT

5. The nature and concentration of pollutants in the discharge from each regulated process.
6. A statement reviewed by an authorized representative of the industrial user and certified by a qualified professional.
   a. An authorized representative may be a principal executive officer of at least the level of vice president if the industrial user is a corporation, a general partner, or proprietor if a partnership or sole proprietorship, or a duly authorized representative with responsiblity for the overall operation of the facility from which the indirect discharge originates.
   b. A qualified professional has been defined as a person who is able to understand the technical data and its implications and may or may not be an employee of the industrial user. The definition of a qualified professional is left to the discretion of the industrial user.
7. If additional pretreatment and/or O&M will be required to meet the pretreatment standards, the shortest schedule by which the industrial user will provide such additional pretreatment is to be presented.

New sources are required to submit to the Control Authority a report which contains the information listed in Items 1 through 5 above after discharge to the POTW commences. In Item 3 above, the phrase "nature... of the operation" refers to the type of regulated industrial processes being carried on by the industrial user. Each regulated process must be identified by description and SIC code and the average production rate in square meters per day (for electroplaters) listed. In Item 4 above, the average and maximum wastewater flows for each of the identified SIC processes should be given. In addition, the industrial user has been asked to list cooling water, sanitary wastewater, and total plant discharge volumes.

As indicated previously, the information required in Item 5 is tailor-made to meet the reporting needs of the electroplaters only, and pollutant designations will change for each industrial subcategory. Each process regulated should be sampled and the pollutant concentration measured and reported in the space provided. The St. Louis MSD has asked only for the reporting of maximum concentrations for any one day and requested these actual concentrations be compared with the standard published for that pollutant. If more than one regulated process effluent is combined (mixed) prior to sampling, then the "equivalent concentration" registered for each pollutant at that sampling point is to be reported and compared with the standard. The actual process concentration must be calculated using contributory flow dilution factors. The District prefers to deal in concentration standards only. However, if an industrial user wishes to utilize mass standards, the District will review its acceptability on an individual basis.

In Item 6 of the report, information is to be provided concerning the industrial user's compliance with pretreatment standards. If the standards are not being met on a consistent basis, then the additional operation and maintenance required to insure compliance is to be listed or the additional pretreatment needed to meet the standards is to be indicated.

If an industrial user is not in compliance with published standards, then his reporting obligation becomes more detailed. The industrial user must attach an estimated schedule of compliance to include increments of progress in the form of dates for the commencement and completion of major events leading to the construction and operation of additional pretreatment systems or additional O&M procedures. Table 6-2 shows a typical pretreatment compliance schedule work plan which gives some insight into the type of information required on the compliance schedule required in Item 7 of the report. Incorporating such defined increments of progress into the overall pretreatment project should insure the design and installation of an effective pretreatment system.

No increment of progress should exceed nine months nor should the final completion date for the project be later than the compliance date established for the applicable pretreatment standard. Also, progress reports will be required to document satisfactory completion of each increment of progress presented in the compliance schedule.

## COMPLIANCE SCHEDULE REPORTING

### Progress Reports

Section 403.12 (c) (3) of the General Pretreatment Regulations requires that progress toward project completion be documented. Not later than fourteen (14) days following the completion date presented for a major increment of progress in the compliance schedule, the industrial user must submit a progress report to the Control Authority. An example of such a compliance schedule progress report is shown in Figure 6-4.

Included in this report should be a description of the increment of progress for which the report is made. This increment of progress should match in description the increment of progress listed in the compliance schedule (see Work Plan, Table 6-2). The scheduled date of completion for the increment of progress should be indicated accompanied by a statement concerning whether or not the increment was completed on schedule. If the increment of progress was not completed, and consequently not on schedule, a new estimated completion date should be provided with a statement addressing the reason for delay and the specific action taken to return the total project to schedule. No more than nine months should elapse between submittal of progress reports to the Control Authority.

### Final Compliance Report

Within ninety (90) days following the date for final compliance of an existing source with applicable pretreatment standards, the industrial user is required to submit to the Control Authority a Final Compliance Report. This report must indicate the nature and concentration of all pollutants in the discharge from regulated processes which are limited by the standards plus the average and maximum daily flow for these processes. The industrial user is also to state whether the pretreatment standards are being met on a consistent basis and, if not, what additional O&M or pretreatment is necessary to realize compliance. Hopefully, the design

TABLE 6-2

## TYPICAL PRETREATMENT COMPLIANCE SCHEDULE WORK PLAN (GENERAL)

| INCREMENT OF PROGRESS (1) | SCHEDULED COMMENCEMENT DATE | SCHEDULED COMPLETION DATE (2) |
|---|---|---|
| 1. Select Engineer | | |
| 2. Engineering Investigation of Plant Conditions (Industrial Process Review & Wastewater Characterization) | | |
| 3. Select Treatment Process & Design Criteria (Treatability Studies) | | |
| 4. Detailed Design of Treatment System (Plans & Specifications) | | |
| 5. Preparation of Operations Manual | | |
| 6. Select Contractor For Construction | | |
| 7. Commence Construction | | |
| a. Site Preparation (survey, excavation, etc.) | | |
| b. Foundation Work & Underground Utilities (slabs, sewer, etc.) | | |
| c. Structural Work (bldgs., etc.) | | |
| d. Mechanical Work (equipment installation, etc.) | | |
| e. Electrical Work (control panels, etc.) | | |
| f. Site Finish Work (fences, clean-up, etc.) | | |
| 8. Pretreatment System Start Up | | |

(1) No Increment of Progress Shall Exceed Nine (9) Months

(2) Final Completion Date Shall Not Be Later Than Final Compliance Date

FIGURE 6-4

## COMPLIANCE SCHEDULE PROGRESS REPORT*

COMPANY NAME: ______________________ ADDRESS: ______________________

DATE SUBMITTED: ____________ AUTHORIZED REPRESENTATIVE: ______________

1. Increment of Progress description: ______________________
______________________________________________
______________________________________________

2. Scheduled completion date for above Increment of Progress: ____________

3. Is Increment of Progress completed on schedule? yes ☐ no ☐

4. If not on schedule, indicate anticipated completion date: ____________

5. State reason for delay, if applicable: ______________________
______________________________________________
______________________________________________
______________________________________________
______________________________________________

6. What action has been initiated to return project to original schedule? ______
______________________________________________
______________________________________________
______________________________________________
______________________________________________

* Report is to be submitted within 14 days after scheduled completion of each Increment of Progress listed in the Compliance Schedule.

EXAMPLE OF INFORMATION REQUIRED IN
COMPLIANCE SCHEDULE PROGRESS REPORTS

and construction of a pretreatment system had placed the industrial user in compliance. As required in the Initial 180-Day Facility Report, the compliance statement must be signed by an authorized representative of the industrial user and certified by a qualified professional. A new source must file such report within 90 days following commencement of the introduction of wastewater into the POTW.

It is obvious that the information requested for the Final Compliance Report closely parallels that information requested in the Initial 180-Day Facility Report. We, therefore, recommend that the format presented for the Initial 180-Day Facility Report presented in Figure 6-3 be used also to comply with this reporting obligation.

## INDUSTRIAL SELF-MONITORING

### Local Program Enforcement

The number of industrial sources and pollutants subject to pretreatment regulations is far greater than the number of direct discharge sources and pollutants controlled by the NPDES permit program. Strict enforcement of the Pretreatment Regulations will probably do more to improve water quality with respect to toxic pollutants than realized by any other previous regulation. It should be emphasized that such strict enforcement will, however, create additional pollution control problems in the arena of hazardous waste management.

In the 1977 amendments to Sections 309 and 402 of the Clean Water Act, Congress assigned the primary responsibility for enforcing national pretreatment standards to the POTWs while providing the U.S. EPA or the NPDES State with the responsibility of assuring local government fulfills its obligations. Once a POTW's local pretreatment program is approved, the conditions of the program will be enforceable through the treatment plant NPDES permit. Section 309 of the Act provides that violations by industrial users of national pretreatment standards be enforced by the POTW. In fact, if after thirty days notification of a violation, the POTW does not commence appropriate enforcement action against an industrial user, the U.S. EPA or the NPDES State may initiate a civil action against the POTW with the violating industrial user made a party to such action. The U.S. EPA also retains authority under Section 309 to bring criminal charges against industrial users who violate national pretreatment standards and against POTWs who violate the terms of their NPDES permit.

It should be emphasized that enforcement of the pretreatment regulations does not depend on whether or not the POTW is Federally funded. Also, the fact that a POTW may not be in compliance with the provisions of the Act does not relieve users of the POTW of their obligations to comply with national pretreatment standards. It is obvious that enforcement of the pretreatment regulations and standards will be a high priority of the POTW and a basis for enforcement will be the self-monitoring reports to be submitted semi-annually to the POTW by the industrial user.

### Self-Monitoring Reports

Mistakes in reporting and possible self-incrimination have always been of concern to those who report business activities to the Internal

Revenue Service, the Occupational Safety & Health Administration, the Bureau of Alcohol, Tobacco & Firearms, or any governmental agency with enforcement powers. For several years, the U.S. EPA has required reporting of effluent quality for compliance with NPDES permits. Now, indirect dischargers will have to report effluent quality as a condition of the Pretreatment Regulations. Section 403.12 (7) (e) requires any industrial user subject to a pretreatment standard to submit "semi-annual self-monitoring" reports to the Control Authority indicating the nature and concentrations of selected pollutants in the effluent from regulated processes. The commencement of such reporting for existing sources is after the compliance date of applicable pretreatment standards. New sources must initiate reporting after commencement of discharge to the POTW. The U.S. EPA had recommended the months of June and December for submittal of these self-monitoring reports. The St. Louis MSD would prefer to stagger such reporting months so that some industries would be reporting in June and December, others in July and January, and others in subsequent months to prevent overloading of report review personnel. In addition to pollutant data, the report is to include a record of measured or estimated average and maximum daily flows for the reporting period. Whether right or wrong, the District has interpreted this flow recording to coordinate with sample collection dates.

Reporting formats for self-monitoring reports must be tailor-made for a particular size industry within a specific industrial subcategory. As will be recalled in examples given previously for the Electroplating Point Source Category, process discharge monitoring requirements vary according to process wastewater flow volume. For example, an electroplater with a total process flow between 10,000 and 51,000 gallons per day must monitor process effluents twice a month and would report on his semi-annual monitoring report the results of twelve (12) samplings. An electroplater with a total process flow between 51,000 and 102,000 gallons per day is to monitor once per week and report the results of twenty-six (26) samplings. The number of pollutants to be monitored for the electroplaters also varies based on flow volume. An electroplater discharging less than 10,000 gallons per day has to monitor for only three pollutants, whereas a facility discharging more than 10,000 gallons per day must analyze for eight or more pollutants. Since the frequency of monitoring, the type of pollutant, and the number of analyses required will vary among industrial subcategories, a uniform reporting form is not practical.

To exemplify the type of format that could be developed for individual facilities and specific self-monitoring requirements, St. Louis MSD has chosen an electroplater with less than 10,000 gallons per day of process wastewater and two regulated processes (A & B) discharging to two separate POTW sewers. The self-monitoring report format developed for this industry is shown in Figure 6-5. The information required by Section 403.12 (7) (n) (1) must be included for each sample collected. On the form this information is titled "sample collection data" and "laboratory data." The date, exact place, method, and time of sampling and the name of the person collecting the samples is required as is the date of analysis, who performed the analysis, and the analytical methods used.

The industrial user exemplified has only to monitor once per month and measure the concentration of three (3) pollutants in each sample collected. The magnitude of the reporting and monitoring of users with high volume

FIGURE 6-5: PRETREATMENT SEMI-ANNUAL SELF-MONITORING REPORT

COMPANY NAME: ______________________ ADDRESS: ______________________

DATE SUBMITTED: ____________ AUTHORIZED REPRESENTATIVE: ______________________

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PROCESS "A" DESCRIPTION: | | | | | | PROCESS "B" DESCRIPTION: | | | | | |
| SAMPLE COLLECTION DATA | LABORATORY DATA | ANALYTICAL DATA | | | | SAMPLE COLLECTION DATA | LABORATORY DATA | ANALYTICAL DATA | | | |
| | | FLOW(GPD) | Pollutant (mg/l) | | | | | FLOW(GPD) | Pollutant (mg/l) | | |
| | | | CNa | Pb | Cd | | | | CNa | Pb | Cd |
| Sample No:<br>Date: Time:<br>Location:<br>Person:<br>Method: | Sample No:<br>Date:<br>Person:<br>Methods: | Daily Max.<br>Month Avg. | | | | Sample No:<br>Date: Time:<br>Location:<br>Person:<br>Method: | Sample No:<br>Date:<br>Person:<br>Methods: | Daily Max.<br>Month Avg. | | | |
| Sample No:<br>Date: Time:<br>Location:<br>Person:<br>Method: | Sample No:<br>Date:<br>Person:<br>Methods: | Daily Max.<br>Month Avg. | | | | Sample No:<br>Date: Time:<br>Location:<br>Person:<br>Method: | Sample No:<br>Date:<br>Person:<br>Methods: | Daily Max.<br>Month Avg. | | | |
| Sample No:<br>Date: Time:<br>Location:<br>Person:<br>Method: | Sample No:<br>Date:<br>Person:<br>Methods: | Daily Max.<br>Month Avg. | | | | Sample No:<br>Date: Time:<br>Location:<br>Person:<br>Method: | Sample No:<br>Date:<br>Person:<br>Methods: | Daily Max.<br>Month Avg. | | | |
| Sample No:<br>Date: Time:<br>Location:<br>Person:<br>Method: | Sample No:<br>Date:<br>Person:<br>Methods: | Daily Max.<br>Month Avg. | | | | Sample No:<br>Date: Time:<br>Location:<br>Person:<br>Method: | Sample No:<br>Date:<br>Person:<br>Methods: | Daily Max.<br>Month Avg. | | | |
| Sample No:<br>Date: Time:<br>Location:<br>Person:<br>Method: | Sample No:<br>Date:<br>Person:<br>Methods: | Daily Max.<br>Month Avg. | | | | Sample No:<br>Date: Time:<br>Location:<br>Person:<br>Method: | Sample No:<br>Date:<br>Person:<br>Methods: | Daily Max.<br>Month Avg. | | | |
| Sample No:<br>Date: Time:<br>Location:<br>Person:<br>Method: | Sample No:<br>Date:<br>Person:<br>Methods: | Daily Max.<br>Month Avg. | | | | Sample No:<br>Date: Time:<br>Location<br>Person<br>Method: | Sample No:<br>Date:<br>Person:<br>Methods: | Daily Max.<br>Month Avg. | | | |

EXAMPLE OF SELF-MONITORING REPORT FOR ELECTROPLATER (<10,000GPD) WITH TWO REGULATED PROCESSES water consumption and several regulated processes can be visualized, although not easily. The sampling, flow measuring, analytical, and reporting costs for high volume discharges will be considerable and the paperwork involved will be voluminous.

## SPILL/SLUG DISCHARGE REPORT

An industrial user is required to notify the POTW immediately once aware of any spill/slug loading of any pollutant including oxygen demanding pollutants (BOD, COD, etc.) released in a discharge of such volume or strength as to cause interference in the POTW. Spills of hazardous substances regulated by 40 CFR Part 117, Section 117.13 (a) should also be reported and immediate action taken by both the industrial user responsible for the spill and the POTW to mitigate any adverse effects and insure protection of personnel, general public, equipment, treatment processes, and the environment.

In reporting such spills, certain essential information must be transmitted as correctly, clearly, and concisely as possible. Every industrial facility which handles materials which could be harmful to the POTW, its employees, the general public, or the environment should have prepared a Spill Prevention Control and Countermeasure Plan (SPCCP). An integral part of such a plan is the procedure to follow in reporting a spill and the procedures to follow in mitigating the adverse effects of the spill. It is essential that responsible industry personnel be familiar with reporting and control procedures.

For immediate notification to the POTW of a spill or slug loading, normally by telephone, the following information should be provided:

- The name of the company and premise address;
- The name of the individual reporting the spill and telephone number where he/she can be reached;
- The time and location of the spill;
- The type of material involved, its volume, and any hazards associated with it;
- The action being taken to control the spill.

Such information is essential to enable the POTW's spill control personnel to determine the route of the spilled material, reaction time available, precautions to follow, containment locations, equipment needed, endangered facilities, additional parties to alert or evacuate, and other action to be taken specific to the type of substance and location. Only through cooperative efforts on the part of all concerned can the severity and damage caused by the spill be minimized.

A written report to record the reason for the spill, the mitigative action taken, and the steps inititated to prevent a recurrence should be sent to the POTW and other affected agencies as soon as possible after the incident. Such documentation may be essential to show "good faith" and the absence of negligence in the event litigation results due to damages incurred by other parties. Five days has been suggested as a reasonable time for submittal of a written follow-up report.

## LOCAL CONTROLS TO ENSURE COMPLIANCE

It makes sense for the POTW to have responsibility for implementing the pretreatment program. While much of the necessary data collection can be accomplished through industry self-monitoring, however, the POTW must still perform a certain amount of sampling. More important, the pretreatment regulations require the POTW to perform sampling, analysis, and inspection activities to identify--independent of information supplied by industrial users--occasional and continuing non-compliance with national pretreatment standards. The regulations also state that sample taking, analysis, and the collection of other information must be performed with sufficient care to produce evidence admissible in enforcement proceedings or in judicial actions.

Right of entry and the requirement for industries to construct-approved sampling chambers are important aspects of a POTW sampling program. EPA requires the POTW to do random sampling, therefore accessibility to the sample chamber is necessary at all times. The same sampling instructions can be used by the POTW for scheduling sampling and field operation preparations.

All sampling chambers should be designed and located in such a manner that automatic mechanical samplers can be used. The security of the sampling apparatus is always a major concern. Additionally, caution must be given machines that are suspended in monbales during rains if infiltration and inflow influences create excessive flows.

Representative sampling is another essential requirement. The location of the sampling chambers at representative sites is the first thing accomplished, but how the sample is taken is the second thing that must be resolved. Samples taken in proportion with the flow is the ideal method of representative sampling. There are many places and circumstances where the flow proportioning method of compositing samples is not possible or practicable. Instead, a weighted average can be calculated in most cases by using a measured amount of flow for each time proportioned sample. (Example: weighted average formula: nv divided by vt, where vt = volume of all samples, n = sample result in mg/l and v = volume/sample period). There are several brands of automatic sampling machines on the market today that have the following features and capabilities:

- Battery operated (rechargeable Ni-Cd and wet cell).
- Sequential sample bottle rotation (variable time rotation selection).
- Bulk collection in a tub.
- Variable sample volumes.
- Flow activating sensor (for intermitting flows).
- Flow proportioning (providing existing flow measuring devices are near the sample site).
- Delayed activation of sampling startup.
- Hermetically sealed.

Generally speaking, samples should not be composited longer than 24 hours per sample. It is recommended that Ni-Cd batteries be changed after 24 hours of automatic sampling operation. Minor maintenance and adjustments on the sampling machine can be made at the same time the daily sample is taken.

Individual sample analyses are collected from each sampling survey for calculations, evaluation, and reporting. A standard reporting form should be used and the entire sampling survey results entered on a concise report form. The sample report form should be designed to observe several days of sampling results quickly and to clearly point out any prohibitive concentrations of pollutants. The industry should be mailed a copy of the report with any other correspondence that may be necessary.

It will also be necessary for the POTW control agency to become the approving authority of all laboratory procedures. The analytical data that accompanies industrial self-monitoring reports that is determined by numerous private laboratories, and perhaps some from captive industrial laboratories, should be certified.

It is suggested that the POTW, if possible, be the approving authority of all laboratories that are performing analytical work that is used in the POTW pretreatment program. The Control Agency should require all self-reported analyses to be certified by an approved laboratory and that one or all of the following laboratory procedure methods are being employed:

- WPCF/AWWA Standard Methods (Current Edition).
- Environmental Protection Agency Methods for Chemical Analysis of Water and Wastewater.
- Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants.

POTW wastewater laboratories should use the same analytical methods listed above for the samples taken by the Control Agency. A legal opinion should be sought on the steps and procedures of samples being brought to the POTW laboratory regarding the laboratory supervisor signing for all incoming samples and a signature of the chemist by each parameter that is determined. It is important to establish continuity from sample taking through laboratory analysis in legal enforcement proceedings.

A standard laboratory analysis form should be designed that includes, at a minimum, the following information for each sample:

- Sample source, address, date, and time;
- Discharge volumes (meter reading, etc.);
- Name of sampler or supervisor;
- Check list of requested parameters to be analysed;
- Signature of laboratory supervisor;
- Time period sample was taken;
- Method of sampling (automatic, manual);
- Type sample (composite, grab);
- Space provided for POTW actions;
- Sample number-laboratory number.

As already suggested, both the POTW and the private laboratories should use the same laboratory analysis reporting form.

## CONCLUSION

Information and guidance relative to POTW and industry reporting and sampling obligations for compliance with pretreatment regulations and standards has been presented. An industrial user not in compliance will be required to design, install, and operate acceptable pretreatment systems or modify existing processes. An industrial user foresighted enough to utilize present systems which minimize waste discharges must maintain the operational effectiveness of such processes. Both must comply with monitoring and reporting requirements.

It is acknowledged that compliance with pretreatment regulations and standards will not be an easy task and the paperwork necessary to document compliance seems overwhelming. Compliance is not, however, an impossibility. True, there will be inconvenience and costs involved. Hopefully, neither will be insurmountable to any individual industry. Manufacturers have had considerable experience in monitoring and regulation processes to evaluate operational efficiency and insure high quality product. Nothing should prevent them from utilizing such skill to maintain high environmental quality.

No one enjoys regulations, but they are necessary to maintain order. Fortunately, the national pretreatment program enables industry to work in cooperation with local governmental agenices to achieve national pollution control objectives. As long as industrial and local governmental officials maintain effective lines of communication, attempt to understand common problems, and strive to help one another meet requirements and honor commitments, national pretreatment and water quality goals will be realized.

# CHAPTER 7

## SLUDGE DISPOSAL IMPACTS: THE CHICAGO EXPERIENCE

### INTRODUCTION

The Metropolitan Sanitary District of Greater Chicago (MSDGC) is a tax supported unit of local government which is chartered under Illinois law to maintain and operate facilities to collect and treat domestic sewage and waterborne industrial waste in an 865 square mile area in northeastern Illinois. The District operates and maintains six wastewater treatment plants that treat approximately 1.5 billion gallons of industrial and domestic wastewater daily. These treatment plants are serviced by 500 miles of intercepting sewers and over 14,000 miles of local sewers which range in size from 4 inches to 28 feet in diameter. As shown in Figure 7-1, the District is also responsible for monitoring all discharges into 72 miles of navigable inland waterways, over 200 miles of small rivers and streams, and 36 miles of Lake Michigan in-shore waters.

Within the jurisdiction of the MSDGC there are an estimated 11,000 industries of which approximately 5,000 are considered wet, that is, discharging some process waste and/or cooling water and, therefore, require monitoring by the Industrial Waste Division of the Research and Development Department of the District.

The District has in operation a Sewage and Waste Control ordinance which was adopted in 1969, and which includes concentration limits for 14 contaminants and nine limiting conditions for discharge of industrial waste to the sanitary sewer system. The ordinance also establishes concentration limits for 26 contaminants and seven limiting conditions for wastewater discharges to the waterways under the District's jurisdiction.

Many industries have found that they can comply with the Sewage and Waste Control Ordinance by process changes and improved housekeeping. However, for some industries, compliance with the Ordinance requires the installation of industrial waste pretreatment facilities. These industries have found that the sludge produced by these pretreatment systems pose serious and costly problems in disposal.

Relying on MSDGC's ten-year base of experience of dealing with industries in the enforcement of a locally conceived and implemented industrial waste control program, this chapter offers insights on the impact of the U.S. EPA pretreatment requirements on sludge production of industrial pretreatment systems. The chapter will focus on control and treatment methodologies, types of sludges produced, problems with sludge disposal, and the special needs and impacts resulting from the priority pollutant regulations.

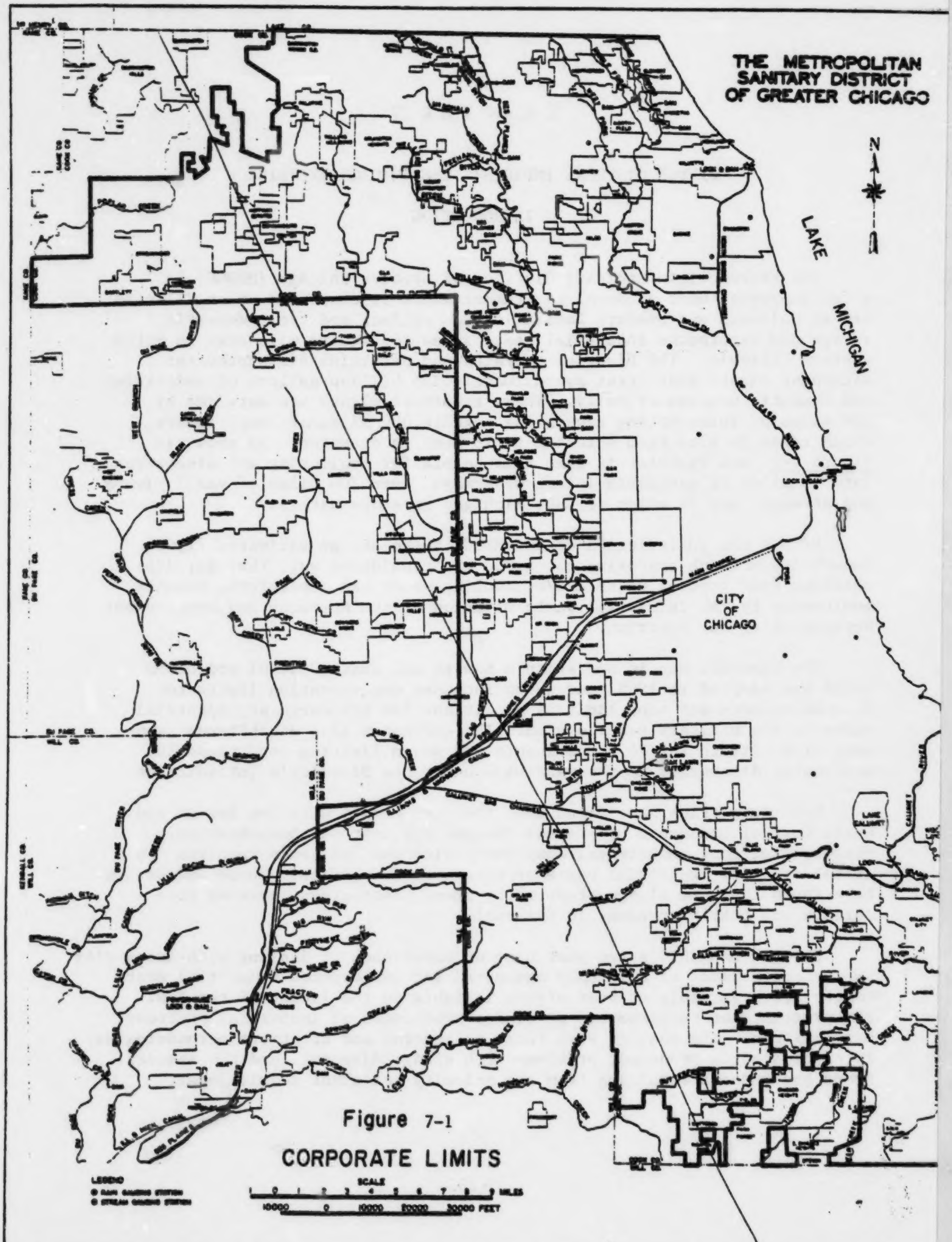

THE METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO
N
LAKE MICHIGAN
CITY OF CHICAGO
LAKE CALUMET
LEGEND
● RAIN GAGING STATION
● STREAM GAGING STATION
SCALE
1 0 1 2 3 4 5 6 7 8 9 MILES
10000 0 10000 20000 30000 FEET

Figure 7-1

CORPORATE LIMITS

## PRETREATMENT PROCESSES AND SLUDGE PRODUCTION

### Types of Pretreatment Processes Generating Sludge

The conventional pretreatment processes used by industry for waste treatment which produce industrial sludges include gravity separation, chemical flocculation and/or coagulation, dissolved air flotation, hydro-screening, and evaporation recovery. These may be used singularly or in various combinations as a pretreatment system.

The gravity separation process may be used either to separate floating solids and/or fats, oils, and greases in the waste stream (skimming) or to separate settleable solids in the waste stream (settling), thereby producing a clarified effluent and a sludge (solid/liquid mixture). The sludge is removed and may be processed further. Sludge concentrations from this process vary widely. The system can usually be operated strictly by gravity but, in some cases, because of system size and sludge characteristics, the sludge and/or liquid must be moved by the use of pumps.

Chemical flocculation and/or coagulation systems are used to concentrate fine suspended solid particles and/or emulsified fats, oils, and greases into a sludge that can be more easily handled. The floc or sludge that is formed is usually further dewatered in order to concentrate the solids. Energy intensive processes, such as vacuum filters, pressure filters, or centrifuges, may be used for dewatering the sludge. Sludge generated by these systems contains from 15% to 40% solids.

Dissolved air flotation (DAF) systems are used with and without the addition of chemicals, equalization, and pH control for the removal of emulsified fats, oils, and grease. This process can also be used in conjunction with various chemical coagulation schemes. This system will develop a sludge that must be dewatered with the use of vacuum filters, pressure filters, or centrifuges.

Hydro-screening is a method for removing solids by passing the waste stream over a stationary or vibrating screen on which the solids in the waste stream are retained and the liquid is allowed to pass through. This system is used to remove coarse particles. The sludge from this process does not, as a rule, require dewatering.

Evaporative recovery is used for closed loop pretreatment systems. These systems are used in the metal plating industry to return concentrated metal streams directly back to the plating solution tanks and to return clear waters to the rinse tanks. This process usually employs an Ion Exchange Water System which is necessary to control the buildup of dissolved solids in the closed loop system. If an Ion Exchange Water System is not used, then a continuous blowdown is required from the evaporative recovery system to control the level of dissolved solids.

The evaporative recovery system requires extraordinarily large amounts of energy to operate the single, double, and three stage evaporation chambers that are found in this type of equipment. Ten years ago, this type of equipment was enjoying increasing popularity as it eliminated or minimized discharge to the sewer and also recycled the otherwise lost materials used in plating. However, drastic increases in energy costs have virtually eliminated this type of equipment from consideration in pretreatment processes.

## Types of Sludges Produced

The end product of most pretreatment systems, with the exception of the evaporative recovery system, is a sludge. This sludge can contain, depending upon the type of waste stream being treated, polar and nonpolar fats, oils, and greases (FOG); metals; cyanides; and miscellaneous chemicals. These pollutants are normally found in concentrated forms in the pretreatment process sludge and pose a difficult and expensive problem for disposal. Polar FOGs in some cases are used as an animal feed, but in most instances these sludges are disposed of in sanitary landfill sites. Landfill site operators do not object to accepting this type of waste (sludge) since the Illinois EPA does not impose any special permit conditions for their acceptance in licensed landfills, and because they seem to blend quite well with other solid wastes.

Non-polar FOGs that are in the form of a sludge can also be used in some cases as a fuel but the majority of the time are disposed of in sanitary landfills. Some landfill operations are restricted in the amount of non-polar FOGs that they can efficiently handle due to the fact that this material will degrade very slowly.

## Hazardous and Toxic Wastes Disposal

Most sludges that contain heavy metals and cyanides are the result of treating the waste streams from electroplating operations. These sludges are now classified as a hazardous waste in the standards set forth in the Resource Conservation and Recovery Act (RCRA). Some sludges are sent to chemical recovery facilities for processing, but the majority of the sludges are disposed of in sanitary landfill sites. Due to stringent regulations governing what can be disposed of in these landfills, it has become extremely difficult and very expensive to handle these sludges.

Most landfill and/or chemical disposal site operators charge for this type of sludge on the basis of its metal concentrations and volume. Cyanide-bearing wastes are treated in the same manner as heavy metal sludges. Today, landfill operators are particularly concerned with the possibility of these materials migrating from the disposal site into a waterway subsurface or drinking water supplies.

RCRA requires the U.S. EPA to place stringent restrictions on the construction and operation of landfills that can accept heavy metal and cyanide-bearing sludges. These conditions have caused an increase in the cost of disposal for such wastes. Probably the most pressing problem with such disposal is the unavailability of proper disposal sites. Most local communities have restricted the construction or operation of such facilities within their jurisdiction because of opposition by local environmental groups.

Miscellaneous chemical waste can be found in both hazardous or toxic forms that may or may not be the result of industrial waste pretreatment systems. Again, it must be emphasized that due to recent public awareness, landfill operators have become reluctant to accept these wastes. As an alternative to land disposal, there are a few incinerators in operation that can burn these wastes. However, this is an expensive method of waste disposal and may result in non-compliance problems with air pollution regulations.

Landfill sites approved by regulatory agencies for the disposal of hazardous wastes are few in number. Table 7-1 shows a recent listing of U.S. EPA approved landfill sites for the disposal of PCB contaminated waste (Federal Register Vol. 43, No. 255 - Wednesday, 12-20-78). There are no other known lists of disposal sites approved by the U.S. EPA for other hazardous wastes.

In Illinois, there are very few sites approved for the disposal of "special wastes," which Illinois EPA document R-76-10 defines as any industrial process effluent, pollution control residual, or hazardous waste, including all liquid waste and sludges.

In a recent study by the Illinois Institute of Natural Resources entitled "Hazardous Wastes Management in Illinois" (Document No. 79/34), it was determined that certain categories of hazardous wastes, in sufficiently small volume, may be acceptable for disposal at any of the 39 licensed Illinois sites while other wastes, such as concentrated cyanide wastes, may not be approved and/or accepted for disposal at any Illinois site. Table 7-2 represents MSDGC's best estimate of the number of Illinois sites currently accepting the categories of the waste indicated.

Due to the very limited choices for ultimate disposal of waste, it appears that this market may be controlled by the operators of the disposal sites. As a result of RCRA regulations, it is not expected that any new hazardous waste sites will be opened in the foreseeable future. There is in the State of Illinois, as elsewhere in the country, a public fear of having such a disposal facility in or near populated areas, public drinking water supplies, or waterways.

The transportation of industrial sludges has proven to be a major problem. It is a known fact that waste transporters remove industrial sludges from generators and illegally dispose of this material in sewers, waterways, and on open lands. RCRA addresses this problem by requiring the States to develop and implement a "manifest" system for identifying the quantity, composition, origin, routing, and destination of hazardous waste during its transportation from the point of generation to the point of disposal, treatment, or storage.

There have been few reported accidental spills of industrial waste sludges during their transportation in Illinois. However, it is anticipated that as the volume of sludge increases, accidents in transportation may become more frequent. Local POTW operators need to have contingency plans to deal with these and other similar emergencies.

The District currently is a participant in a multi-agency response contingency plan. In addition to MSDGC, the participants in this contingency plan are the Illinois State Fire Marshall's Office, the United States Coast Guard, the Chicago Fire Department, the City of Chicago Department of Environmental Control, the Illinois Emergency Service and Disaster Agency, the Illinois Environmental Protection Agency.

## THE METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

### TABLE 7-1

### USEPA APPROVED PCB DISPOSAL FACILITIES*

The following facilities have been approved by the USEPA for the disposal of PCB contaminated materials and sewage sludge:

| NAME | REMARKS |
|---|---|
| Newco Chemical Waste Systems, Inc.<br>4526 Royal Avenue<br>Niagra Falls, N. Y. 14304<br>(716) 285-6944 | Landfill |
| SCA Chemical Services, Inc.<br>1550 Balmer Rd.<br>Model City, N. Y. 14107<br>(716) 754-8231 | Landfill |
| Waste Management of Alabama, Inc.<br>P. O. Box 1200<br>Livingston, Ala. 35470<br>(205) 652-9529 | Landfill |
| Newco Chemical Wastes Systems of Ohio<br>5092 Aber Rd.<br>Williamsburg, Ohio 45176<br>(513) 724-6114 | Landfill |
| Casmalia Disposal<br>539 Ysidro Road<br>P.O.Box 5275<br>Santa Barbara, Calif. 93108<br>(805) 969-4703 | Landfill |
| Nuclear Engineering Co., Inc.<br>9200 Shelbyville Rd.<br>Suite 526<br>P. O. Box 7246<br>Louisville, Ky. 40207<br>(502) 426-7150 | Landfill |

## THE METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

### TABLE 7-1(continued)

### USEPA APPROVED PCB DISPOSAL FACILITIES*

The following sites are approved by the USEPA for disposal of PCB material other than sewage sludges:

| NAME | REMARKS |
|---|---|
| Chemical Waste Landfill<br>Portland, Oregon<br>(503) 233-1912 | Abandoned intercontinental ballistics missle silo |
| Wes-Con<br>Twin Falls, Idaho<br>(208) 734-7711 | Abandoned intercontinental ballistics missle silo |
| General Electric<br>Waterford, New York | Incinerator for General Electric Corporation use only |

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* Federal Register Vol. 43, No. 245 - Wednesday, 12-20-78

# THE METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

TABLE 7-2

## AVAILABLE HAZARDOUS WASTE DISPOSAL SITES IN ILLINOIS*

| Category | Current Sites |
|---|---|
| Metals | 3 |
| Solvents - High Flash Point | 10 |
| - Low Flash Point | 2 |
| FOG | 39 |
| Acids - Strong | 3 |
| - Mild (pH>4.5) | 39 |
| Toxic Chemicals | 2 |
| Cyanide - (CN<1000 mg/l) | 1 |
| - (CN>1000 mg/l) | 0 |

---

* "Hazardous Wastes Management in Illinois", Illinois Institute of National Resources, Document No. 79/32. Prepared by Patterson Associates Inc., Chicago, Illinois

For handling hazardous and toxic material spill incidents within Cook County, the following responsibilities have been established:

- In the event of a hazardous or toxic material spill to a waterway, the United States Coast Guard has the primary responsibility for control and acts as the on-scene coordinator, with MSDGC acting as their first support agency.
- For hazardous material spills or a toxic gas incident within the corporate limits of the City of Chicago, the Chicago Fire Department has the primary responsibility for control and acts as the on-scene coordinator. The first support agency to the Fire Department is the Chicago Department of Environmental Control; the second support agency is MSDGC.
- In the case of a hazardous or a toxic material spill in Cook County outside of the City of Chicago, the District has primary responsibility for control and acts as the on-scene coordinator, with all other agencies acting in a support capacity. In the case of a toxic gas incident, the Cook County Department of Environmental Control has primary responsibility for control and acts as the on-scene coordinator, with all other agenices acting in a support capacity.

The agency that has the primary responsibility in each case is responsible for the entire operation, including investigation, coordinating clean-up, and media releases. Presently, MSDGC, during its normal procedure in responding to toxic and hazardous materials spills, does in all cases conduct an investigation and, in many cases, coordinates clean-up operations and provides information to the media when requested.

## District Sludge Disposal Control System (Manifest)

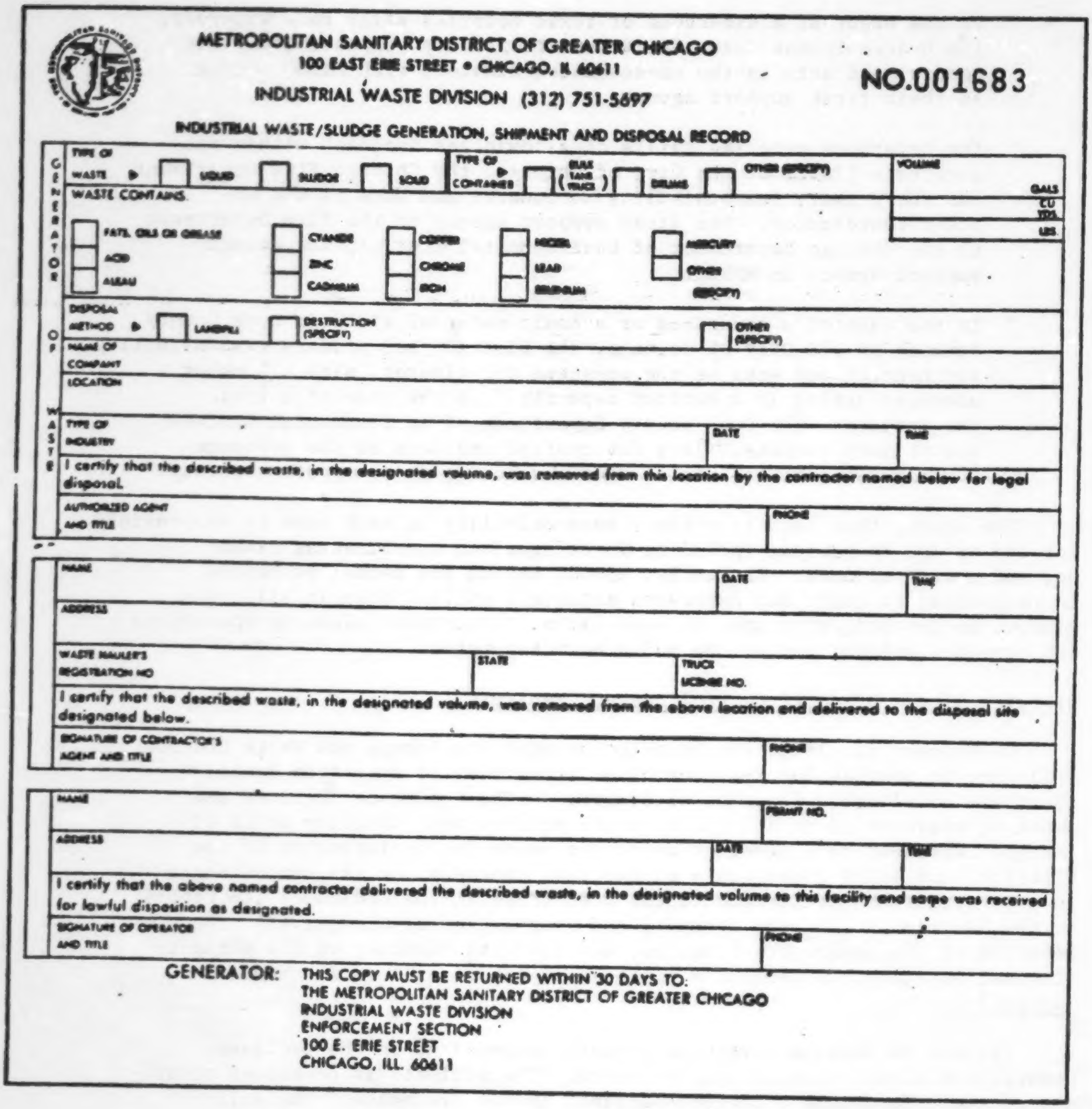
On October 12, 1978, the District amended its Sewage and Waste Control Ordinance to provide for the control of industrial sludges from location of origin to ultimate location of disposal. The Ordinance requires the owner or operator of an industrial waste pretreatment facility which discharges effluent to a sewer or to waters under the jurisdiction of the District, and which generates a sludge that contains certain contaminants in concentrations greater than those prescribed in the Ordinance, to report to the District: (1) the quantity and composition of sludge; (2) the identity of the scavenger or hauler; and (3) the identity of the ultimate disposal location. A facsimile of the self-reporting form is shown on Figure 7-2.

Failure to furnish completed reports as required in the Ordinance constitutes a violation of the Ordinance. The violator is processed according to the enforcement procedure outlined in the Ordinance. The self-reporting forms were sent out to industry in January 1979, and the District began keeping records on their return on February 1, 1979. Results are shown on Table 7-3.

Since this amendment has been in effect, it has had a dramatic effect on landfill and disposal practices. Landfill operators have refused to accept an increasing amount of certain waste loads from scavengers. The

FIGURE 7-2

## THE METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO



**METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO**
100 EAST ERIE STREET • CHICAGO, IL 60611
INDUSTRIAL WASTE DIVISION (312) 751-5697

NO.001683

INDUSTRIAL WASTE/SLUDGE GENERATION, SHIPMENT AND DISPOSAL RECORD

GENERATOR OF WASTE

TYPE OF WASTE ▶ ☐ LIQUID ☐ SLUDGE ☐ SOLID
TYPE OF CONTAINER ▶ ☐ (BULK TANK TRUCK) ☐ DRUMS ☐ OTHER (SPECIFY)
VOLUME: GALS / CU YDS. / LBS.

WASTE CONTAINS:
☐ FATS, OILS OR GREASE ☐ ACID ☐ ALKALI
☐ CYANIDE ☐ ZINC ☐ CADMIUM
☐ COPPER ☐ CHROME ☐ IRON
☐ NICKEL ☐ LEAD ☐ SELENIUM
☐ MERCURY ☐ OTHER (SPECIFY)

DISPOSAL METHOD ▶ ☐ LANDFILL ☐ DESTRUCTION (SPECIFY) ☐ OTHER (SPECIFY)
NAME OF COMPANY
LOCATION
TYPE OF INDUSTRY | DATE | TIME

I certify that the described waste, in the designated volume, was removed from this location by the contractor named below for legal disposal.

AUTHORIZED AGENT AND TITLE | PHONE

NAME | DATE | TIME
ADDRESS
WASTE HAULER'S REGISTRATION NO | STATE | TRUCK LICENSE NO.

I certify that the described waste, in the designated volume, was removed from the above location and delivered to the disposal site designated below.

SIGNATURE OF CONTRACTOR'S AGENT AND TITLE | PHONE

NAME | PERMIT NO.
ADDRESS | DATE | TIME

I certify that the above named contractor delivered the described waste, in the designated volume to this facility and same was received for lawful disposition as designated.

SIGNATURE OF OPERATOR AND TITLE | PHONE

**GENERATOR:** THIS COPY MUST BE RETURNED WITHIN 30 DAYS TO:
THE METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO
INDUSTRIAL WASTE DIVISION
ENFORCEMENT SECTION
100 E. ERIE STREET
CHICAGO, ILL. 60611

INDUSTRIAL WASTE/SLUDGE GENERATION, SHIPMENT AND DISPOSAL RECORD

## METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

## TABLE 7-3

## RESULTS OF MSD SLUDGE MANIFEST REPORTING FOR 1979

| | February | March | April | May | June | July | August | September | October | November | December | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metal/Cyanide Wastes | 12.7 | 11.6 | 11.8 | 12.9 | 13.7 | 13.2 | 12.4 | 15.4 | 21.3 | 19.8 | 16.9 | 161.8 |
| Acid/Alkali Wastes | 2.0 | 6.6 | 6.5 | 7.0 | 6.5 | 6.8 | 8.6 | 6.8 | 8.6 | 6.6 | 5.8 | 71.6 |
| FOG Wastes | 4.2 | 9.6 | 5.9 | 7.9 | 7.5 | 7.8 | 11.8 | 12.0 | 13.4 | 14.3 | 15.1 | 109.5 |
| Other Wastes | 1.7 | 2.7 | 15.0 | 16.5 | 18.5 | 19.9 | 17.4 | 22.9 | 19.0 | 19.5 | 16.2 | 169.4 |
| Total | 20.6 | 30.5 | 39.2 | 44.3 | 46.2 | 47.7 | 50.2 | 57.1 | 62.3 | 60.2 | 53.9 | 512.3 |
| Number of Violations for Manifest Non-Reporting | 0 | 2 | 6 | 7 | 6 | 10 | 29 | 16 | 11 | 25 | 5 | 117 |
| Number of Complete Manifest Forms Returned | 333 | 844 | 979 | 1,177 | 1,124 | 1,247 | 1,498 | 1,641 | 1,809 | 1,822 | 1,671 | 14,145 |

All quantities expressed in millions of pounds
Recording of results began February 1, 1979

operators of the landfill sites were formerly under the impression that the scavengers were disposing of garbage. Once the Ordinance required the landfill operators to fill out their portion of the report form, they have become aware of the necessity to check the content of waste loads coming to their facilities. In many instances, the hauler alleged that the waste was garbage or other innocuous waste, rather than industrial sludge. The landfill operators refused to accept the waste for two reasons. First, the scavenger and generator were paying for the disposal of garbage and not an industrial sludge. Second, in many cases, the landfill operators were unknowingly accepting hazardous wastes. As a result of the sanitary landfill operators' becoming aware of the origin and character of wastes, the cost of disposal of these wastes has risen, in some cases drastically.

Information supplied on the self-reporting forms to date shows that most of the industrial sludges generated in the District's jurisdiction are going to one of three landfills in the Chicago area. These are the Waste Management CID site located near Lake Calumet, the Waste Management ESL site near Joliet, and the Nuclear Engineering site near Sheffield. The CID Calumet site accepts wastes which are not containerized, whereas the ESL Joliet site and the Sheffield site will only accept wastes which are containerized. Small amounts of industrial sludges are also being disposed of at the Lake Landfill near Northfield and the Browning Ferris, Inc., site near Waukegan. These sites are all approved by the Illinois EPA, Division of Land Pollution.

The self-reporting forms have also shown that a modest amount of industrial sludges are being taken to three incinerators which are operating in the Chicago area. In a discussion with Illinois EPA personnel, MSDGC learned that these incinerators are not approved disposal operations. Some of these sites are presently under an enforcement action or litigation by the State in an attempt to prohibit their accepting industrial waste for incineration.

## CASE HISTORIES

Three brief case histories of industries in the District are given to show the typical types of pretreatment systems, sludges produced, and energy consumed. These three are a leather tanner, a captive plater, and an industrial laundry.

### Leather Tanning

This industrial facility operates an industrial waste pretreatment system that treats approximately 0.7 MGD. This treatment system consists of waste equalization, automatic pH control, chemical flocculation, clarification, centrifuging of the sludge that results from the clarification process, and the recycling of approximately 30% of process waters. This waste treatment facility produces 3-11 cu. yds. of sludge daily. Current (1979) cost for disposal of this sludge is $7.65-$8.25 per cu. yd. The sludge generated from this industry contains organic chemicals; fats, oils or greases; copper; chromium; iron; lead; and mercury. It is classified as hazardous waste.

Energy costs for operating pollution control equipment were approximately $22,000 in 1978, and although the plant performed 25% less work per pound of hide in 1979, energy costs were reduced by only 9% to $20,000, due to a fuel cost adjustment.

The company estimates that approximately $23,000 was expended for labor in maintenance and operation of the pretreatment equipment.

## Captive Metal Plating

This industry operates three evaporative recovery systems for the recycling of the effluent from their cadmium, chromium, and nickel plating lines. The cadmium evaporative recovery unit is a double effect evaporator and is rated at 400 gallons per hour and operates 16 hours per day (6400 gpd). The chromium and nickel evaporative units are both single stage systems that operate 16 hours per day and are rated at 300 gallons per hour (4800 gpd) for chromium and 200 gallons per hour (3200 gpd) for nickel. These systems do not develop a sludge but utilize a continuous blowdown to the sewer system to control dissolved solids in the effluent that is returned to the plating lines. A blowdown is not required of these systems if deionized water is used for the plating operation.

This waste treatment system also utilizes automatic pH control, and a 26,500 gallon equalization tank that, in turn, discharges to a dissolved air flotation system for the removal of oils and greases from various metal cleaning operations. The dissolved air flotation system is rated at 85 gpm, operates 16 hours per day (81,000 gpd), and presently produces approximately 100,000 gallons of sludge per year.

Sludge removal costs for 1979 were estimated by the company as follows:

| | | |
|---|---|---|
| Free Cyanide Waste<br>5,000 gal/4 times per year @ $1.60/gal.<br>1979 cost: | $32,000 | |
| Heavy Metal Hydroxide Waste<br>3,200 gal/bi-weekly @ $0.80/gal.<br>1979 cost: | $66,560 | |
| Total cost for Sludge Disposal: | | $98,560 |
| Chemical costs for 1979, including sulfuric acid, sodium hydroxide, sodium bisulfite and sodium hypochlorite: | $39,000 | |
| Energy costs for operation of pretreatment equipment for 1979: | $98,700 | |
| Labor costs for operation of pretreatment equipment for 1979: | $120,000 | |
| Total estimated costs for operation of this industrial waste pretreatment system for 1979, including sludge disposal. | | $356,260 |

This type of waste treatment system accomplished one of the major goals of the U.S. EPA: the reuse of process waters. It can also be clearly seen that this method of treatment is very expensive and could be accomplished more economically if this company did not want to reuse its process waters.

## Industrial Laundry

This industrial facility has installed a pretreatment system for treatment of their wastewaters (breakwaters). The pretreatment system consists of equalization, chemical flocculation, and dissolved air flotation. Vacuum filters are used to dewater the sludge developed by the dissolved air flotation process. This system is rated at 100,000 gallons per day and costs for sludge disposal and chemicals increased from approximately $25,000 during 1978 to over $32,000 during 1979, a 30% increase. During September 1979, sludge removal costs increased from $5 per cubic yard to $10 per cubic yard. The overall cost of treatment per 1000 gallons of wastewater increased from $1.25 in 1978 to $1.64 in 1979. This system treated approximately 19,600,000 gallons of wastewater in both 1978 and 1979, and developed, respectively, 1135 and 1280 cubic yards of sludge which was disposed of in a sanitary landfill.

A major problem in attempting to develop any type of statistical evaluation concerning the cost of operation of industrial waste treatment systems is that industry does not separate and identify pretreatment costs from production or process costs. Consequently, it is not possible to develop any factual figures for this cost relating to energy, chemicals, labor, or maintenance for these pretreatment systems.

# PRIORITY POLLUTANTS

## General

The U.S. EPA pretreatment policy and the general pretreatment regulations are based upon the Federal Water Pollution Control Act as amended by the Clean Water Act (CWA) of 1977 (P.L. 95-217). The intent of the pretreatment regulations is to prevent the introduction of pollutants into publicly owned treatment works (POTWs) which will: Interfere with treatment processes, contaminate sludge solids, and pass through to receiving waterways. The absence of such toxic pollutants will also enhance the opportunities to recycle and reclaim wastewaters and sludges resulting from wastewater treatment.

With the passage of these regulations, the focus on the control of point source discharges has expanded from conventional parameters such as biochemical oxygen demand (BOD) and suspended solids (SS), to toxic organics and inorganic pollutants. Section 307 (a) of the CWA requires that effluent limitations be established for toxic pollutants for the various industrial categories. In a similar manner, pretreatment standards are to be developed under Section 307 (b). These pretreatment standards will include general discharge prohibitions that apply to all users of a POTW. Each POTW with a design flow of more than five mgd and which receives wastes containing toxic priority pollutants will be required to have a pretreatment program by July 1, 1983, in order to be eligible for the issuance or reissuance of a National Pollutant Discharge Elimination (NPDES) permit.

The objective in the initial phases of establishing a pretreatment program is to conduct a comprehensive survey and analysis of the industrial wastes discharged into the POTWs, discharges to the waters of the receiving water bodies, and to develop pretreatment requirements for industries.

The comprehensive program of sampling and analysis should include influent, effluent, and sludges of the POTWs and the discharges from industrial point sources to sewers. Analysis of the collected samples should include the 129 toxic priority pollutants which have been identified by the U.S. EPA as requiring a pretreatment program. These pollutants include 114 organics, 13 metals, cyanide, and asbestos. With the exception of cyanide, phenol, and several of the metals, there is very little information available concerning the concentration of these toxic pollutants in municipal and industrial wastewaters and their effect on treatment plant processes and receiving water bodies.

The District, with its existing program is essentially in compliance with the pretreatment regulations. However, the District does not presently monitor or have established control limits for the organic priority pollutants. Therefore, MSDGC must develop this phase of the program. MSDGC's basic plan for the development of this phase consists of four work elements to be carried out over the period of time remaining prior to July 1, 1983. The work elements are structured according to the type of activity involved, and various sub-components could be carried out concurrently. The work elements include:

- Preliminary Investigation
- Project Design
- Laboratory Activity
- Field Activity
- Data Analysis and Development of Pretreatment Control Limits

## Major Work Components

The preliminary inspection will include a comprehensive inventory and inspection of industry and industrial point sources. This industrial survey will be conducted through plant site visits and a questionnaire specifically designed to provide information on the function, process, product, raw material usage, wastewater quality and quantity, and number of outfalls of each industry. This element will be accomplished during the first two years.

Project design will include acquisition of laboratory and office facilities; laboratory equipment identification and purchase; field equipment acquisition; and other necessary physical plant support systems. This element will also be accomplished during the first two years.

Field activity includes the verification of the industry inventory and preparation for an implementation of sampling the industries and POTWs. Actual sampling and analysis has already begun. Only those industries suspected of the discharge of measurable concentrations of organic priority pollutants will be sampled.

Laboratory activity includes the processing and analyzing for the 114 organic priority pollutants and the 15 inorganic materials, including metals. Laboratory quality assurance programs must be included. This work element will begin as soon as laboratory facilities and laboratory methodologies are proven for on-going analysis. It will continue through and beyond the July 1, 1983, date for program operation. For proper performance of analytical work no less than 15% of the total samples should be provided for laboratory quality assurance.

The last element includes the analysis of data resulting from the industrial inspections and samplings and the sampling of POTWs. The analysis of data is directed toward determining pollutant removal effectiveness through the POTW and establishing industrial pretreatment control limits, if necessary.

The District's pretreatment program proposal to cover the area of its jurisdiction has been submitted to the Illinois EPA. When there will be an acceptance by the Illinois EPA and U.S. EPA is uncertain at this time.

The proposal is designed to sample the seven District sewage treatment plants, which range in size from 1.2 mgd up to 1200 mgd, including the sludge process streams which result in sludge production of approximately 550 dry tons per day. Of the 6,000 "wet" industries within the District's jurisdiction, it is anticipated that about ten percent will be sampled for measurable concentrations of organic priority pollutants.

The District's proposal is designed to carry out an investigation of the industries, including the inspection of plant facilities and sampling of waste dischargers. Approximately 300 industries are considered primary industrial sources of measurable concentrations of organic priority pollutants and would be sampled three times over a three-year period. Approximately 300 industries are identified as secondary dischargers of these pollutants and would be sampled once in the three-year period. Each sampling would involve the collection of a daily composite sample.

At District treatment facilities influent, effluent, and sludge streams will be sampled. Each plant will be sampled initially for three consecutive days for each of the waste streams. Daily composites will be collected. Subsequent to the initial sampling, daily composites will be collected once each quarter for monitoring purposes.

## Impact on POTW Operators

The priority pollutant control program will have a significant impact on POTW operators. Based on the national scope and complexity of the regulations, it is obvious that the personnel and equipment resources of POTW operators will be significantly increased. Perhaps the areas requiring the greatest demand on personnel resources are the professional chemists necessary to supervise and operate the complex gas chromatograph mass spectrophotometers. It is unlikely that a sufficient supply of qualified chemists would be available, should this program be fully implemented nationwide.

In addition, the POTW personnel who must enforce the eventual pretreatment requirements will need sophisticated knowledge on technology and methodology of dealing with priority pollutant pretreatment. Little, however, is known in this field at the present time.

## Impact on Industries

Industry will bear the burden of the cost impact of the priority pollutant pretreatment regulations. The present state of the art of pretreatment technology will require a heavy emphasis in research and development of technologies and methodologies of dealing with priority pollutant removal and control. The nature of these pollutants is such that removal at the source is perhaps the most effective control method. Such is the case with PCB. The manufacture of this chemical has been restricted for several years, as this appears to be the only effective way to deal with this persistent chemical compound.

Any sludges produced by industrial pretreatment systems will fall under the provisions of RCRA. This will result in highly controlled disposal methods for these sludges. With time, the quantity of sludges produced will increase as greater demands for treatment are made through pretreatment requirements. Control of disposal areas will also become more critical, and there will probably be a concurrent decline in the availability and capacity of disposal sites.

Therefore, if emphasis for control is placed upon pretreatment, we can expect an increased demand for treatment technology, energy, and sludge disposal sites in the near future, all of which will result in increased costs. If, however, the emphasis for priority pollutant control is placed on restriction of manufacture, distribution, and use then these increased demands for treatment technology, energy, and disposal sites may not materialize.

# CHAPTER 8

## THE CITY OF CHATTANOOGA INDUSTRIAL - MUNICIPAL PRETREATMENT PROGRAM

## ABSTRACT

Faced with stringent 201 grant requirements to accomplish industrial waste control for protection of its 79 million dollar wastewater plant expansion, the City of Chattanooga has developed an innovative and comprehensive industrial pretreatment program to satisfy the conditions in its grant agreement. The goal of the strict compliance schedule in the grant agreement was to achieve control of industrial wastes by 1983 so that the plant expansion scheduled for completion then will be able to meet its NPDES permit conditions. The pretreatment program that evolved from the grant conditions is unique since it was developed simultaneously with the promulgation of EPA's General Pretreatment Regulations and has been tailored to meet the requirements of EPA's National Pretreatment Strategy. The program developed by Chattanooga is additionally incorporating the National Categorical Standards now being issued by EPA and is one of the few cities to have sufficient data on "Consistent Removal" of toxic pollutants to apply to EPA for Local Removal Credits. The mass balance technique used by the City for developing local standards (as required by EPA regulation) has been adopted by the State of Tennessee and was recommended to the 41 cities in the State required to develop local programs. The results of the industrial waste survey, comprehensive sampling program, inplant studies, and program costs will be of value to other municipalities required to develop local programs and to municipalities considering extending the benefits of local credits to their industries. The significance of cooperation with and by regulated industries is highlighted.

## INTRODUCTION

EPA proposed in February 1977 a comprehensive, unified National Strategy for regulating industrial discharges. The overall impact of this regulation (and its extensions, the National Categorical Standards) may be more significant in terms of public and private dollars than any other program to come from the Clean Water Act. While large POTWs have generally been aware for some years that unregulated industrial discharges cannot be tolerated, many small and medium sized municipalities (including Chattanooga) have not been aggressive in this area. One of the most valuable byproducts of this current round of regulatory activity has been to galvanize these municipalities not taking action to examine their systems and to evaluate and optimize operation of their POTWs. This chapter discusses the effects of the pretreatment regulations on the City of Chattanooga. Hopefully, the lessons learned by Chattanooga will prove useful to other municipalities as they develop and implement local pretreatment programs.

## CASE HISTORY

### Plant Expansion

Presently, the City operates a 42 MGD (design) air activated sludge plant at Moccasin Bend and a smaller 3.5 MGD activated sludge plant at Brainerd which will be phased out through the 201 plan. The system serves a community where half the flow, 65% of the BOD, and 75% of the COD load is from industry. The larger plant was expanded to its present size and capacity in 1971 and was provided with a Zimpro wet-air oxidation facility to treat the secondary waste activated sludge. This unit operated unsatisfactorily for about two years before the problems of odor and high organic recycle became unbearable. At the time of its shutdown, part of the operational problems of the Zimpro system were attributed to the high industrial waste load to the main plant. At present, all of the waste activated sludge is discharged directly to the Tennessee River under interim NPDES standards.

Hydraulic and organic overloads, wide fluctuations of influent characteristics, and the lack of an acceptable disposal method for the secondary sludge were problems evaluated through the 201 process. Pilot plant studies led the City's consultants and process vendors to the conclusion that pretreatment and source control would be necessary before any process could be made to operate dependably. When these reports were issued to the regulatory agenices, they agreed that a strong and aggressive sewer use ordinance was needed. Therefore, the City was required to develop and implement a new and comprehensive ordinance as a special condition to the Step II Grant.

The first ordinance to satisfy the Step II Grant was passed in January 1977. The list of pollutants which would be controlled by the ordinance was developed utilizing the proposed 208 basin plan standards and the State of Tennessee Discharge Permit. This ordinance regulated 32 different pollutants. The levels were based on the BPT (Best Practicable Treatment) levels which were being imposed on direct dischargers by the State of Tennessee under its own permit system at that time and are shown in Table 8-1.

That ordinance was adopted by the City Commission over the objections of the industrial community. At that time, there was a definite communications problem which led to misunderstandings with respect to the goals of the ordinance. However, the City Commission promised the Chattanooga Manufacturer's Association (the principle organization of affected industries) that the City would give every consideration possible to their requests to review the standards and to determine whether a variance procedure for granting exceptions to the standards would be possible.

Shortly after the adoption of the 1977 ordinance, the City technical staff developed a new plan for setting ordinance limits based on protecting plant processes and the environment. The main problem with the 1977 standards was that they were not the result of a logical thinking process designed to satisfy the requirements specified in Section 307 of the Clean Water Act to: 1) protect the treatment plant processes; 2) prevent pass-through of inadequately treated pollutants; and 3) protect the sludge

## TABLE 8-1

## 1977 INDUSTRIAL EFFLUENT LIMITATIONS

| PARAMETER | AVERAGE CONCENTRATION (mg/1) | MAXIMUM CONCENTRATION (mg/1) |
|---|---|---|
| Biochemical Oxygen Demand | * | - |
| Chemical Oxygen Demand | * | - |
| Suspended Solids | * | - |
| Antimony | 5.0 | 8.0 |
| Arsenic | 1.0 | 1.5 |
| Barium | 35.0 | 50.0 |
| Boron | 55.0 | 80.0 |
| Cadmium | 1.0 | 1.5 |
| Chromium-Total | 0.5 | 1.0 |
| Cobalt | 10.0 | 15.0 |
| Copper | 1.0 | 1.5 |
| Cyanide | 1.0 | 1.5 |
| Fluoride | 45.0 | 70.0 |
| Iron | 45.0 | 70.0 |
| Lead | 1.0 | 1.5 |
| Magnesium | 10.0 | 15.0 |
| Manganese | 1.0 | 1.5 |
| Mercury | 0.1 | 0.2 |
| Nickel | 3.0 | 4.5 |
| Phenols | 10.0 | 15.0 |
| Phosphorus | 10.0 | 15.0 |
| Selenium | 0.1 | 0.2 |
| Silver | 1.0 | 1.5 |
| Strontium | 30.0 | 50.0 |
| Tin | 10.0 | 15.0 |
| Titanium | 3.0 | 5.0 |
| Zinc | 2.0 | 3.5 |
| Total Kjeldahl Nitrogen | 60.0 | 90.0 |
| Oil and Grease (Hexane or Petroleum Soluble) | 100.0 | 150.0 |
| Total Dissolved Solids | 5,000.0 | 7,500.0 |
| M.B.A.S. (Non-Biodegradable) | 5.0 | 8.0 |
| Organic Toxicants | N.D.A. | N.D.A. |

---

* Depends on plant design.

N.D.A. No Detectable Amount

from contamination by pollutants to a degree that the least costly, environmentally safe disposal means could not be used. Rather, the limits that were used were only based on an estimate of industrial treatment capabilities. In that regard, the 1977 standards closely resembled the present EPA approach for the development of National Categorical Standards and, therefore, suffered from many of the same defects and shortcomings.

## Program Development

As part of the 201 process, a strict timetable of compliance milestones was attached to the Step II Grant Agreement by the State of Tennessee. This timetable has since been modified by the State Director to conform to the requirements in the General Pretreatment Regulations and is now included in all municipal NPDES permits issued by the State. Table 8-2 shows all the steps in a typical NPDES permit. The Chattanooga program has minimally satisfied all the requirements except for the last two steps which require a public presentation and formal application for approval.

As NPDES permits are reissued by the State Director, all municipalities in Tennessee must accomplish Activities 1, 3, and 4, (industrial survey, development of protection criteria, and adoption of an acceptable sewer use ordinance). Additionally, the State estimates that 41 cities will have to perform all 13 activities for complete program.

The survey of various lists of industries in Chattanooga resulted in a list of 340 industries thought to be capable of discharging a non-domestic waste to the sewer system. These industries were contacted by letter and required to complete a permit application which included a wastewater characterization for the 32 pollutants in the ordinance. The application also included a questionnaire concerning waste producing processes. This list did not include garages or other small commercial establishments, unless they had SIC Codes listed in the EPA National Pretreatment Strategy.

The completed application ultimately resulted in 182 permits being issued to 130 firms (some with multiple discharges) on February 1, 1979. However, it was necessary to review the ordinance standards as promised by the Commission and possibly revise those standards prior to issuing the permits. Changes to the ordinance standards were based on developing two tables of limits. One table would list the most critical concentrations for a particular pollutant chosen by comparing plant inhibition data, sludge protection requirement, and NPDES permit requirements. This process would result in "protection criteria" to satisfy Section 307 of the Act. This process is illustrated in Figure 8-1. Sludge protection criteria were not known at the time this first table was developed; however, the Moccasin Bend sludge was tested in June 1980 and none of the pollutants tested were of the critical level as shown in Table 8-3. The second table of standards (and more significant from an enforcement standpoint) specified what levels could not be exceeded by a given industrial discharge at the point it entered the City Sewer System. It is interesting to note that these types of standards were called "optional" in a recent EPA model ordinance. This, however, is misleading. Such standards are the only practical means of enforcing discharge permits. By way of illustration, notice that there is nothing "optional" about the standards in NPDES permits for direct dischargers.

## TABLE 8-2

## POTW NPDES COMPLIANCE SCHEDULE

| Activity Number | Activity |
|---|---|
| 1. | On or prior to ___________, the permittee shall submit the results of an industrial user (IU) survey in accordance with 40 CFR 403.8 (f)(2)(i), including any IU's covered under Section 301 (i)(2) of the Act. As much information as possible must be obtained relative to the character and volume of pollutants contributed to the POTW by the IU's. |
| 2. | On or prior to ___________, the permittee shall submit a technical report acceptable to the Tennessee Division of Water Quality Control which accurately characterizes the wastewater influent to the POTW in terms of flow, compatible and incompatible pollutants as well as upsets and/or loading variation. |
| 3. | On or prior to ___________, the permittee shall submit a technical report acceptable to the Tennessee Division of Water Quality Control which establishes the protection criteria for the POTW in terms of Interference, Inhibition and pass-through. Thus, this report must specify influent limitations at the POTW for prohibited pollutants (as defined by 40 CFR 403.5) contributed to the POTW by the IU's. |
| 4. | On or prior to ___________, the permittee shall obtain adequate legal authority to administer a pretreatment program by adopting a Sewer Use Ordinance (SUO) acceptable to the Tennessee Division of Water Quality Control for the control of discharges to the sewerage system of the City of _____________ by all IU's. |
| 5. | On or prior to ___________, the permittee shall submit a summary report relative to the progress and direction of the POTW Pretreatment Program. The scope of this report must address two items: (a) Revisions to NPDES pretreatment compliance schedule (on the basis that the POTW is justified in not being required to have a complete pretreatment program or more time is needed to complete activities than originally anticipated). (b) Amendments to the pretreatment grant, if applicable. |
| 6. | On or prior to __________, the permittee shall submit a technical report acceptable to the Tennessee Division of Water Quality Control which accurately accounts for all pollutant sources. This report must contain a pollutant-by pollutant mass balance analysis of the sewerage system |

Table 8-2, continued:

showing the correlation of the industrial contributions with that of actual influent POTW conditions.

7. On or prior to __________, the permittee shall submit a technical report acceptable to the Tennessee Division of Water Quality Control which explains the design of a monitoring program necessary to implement the POTW pretreatment program and to carry out the directives of the SUO.

8. On or prior to __________, the permittee shall submit a list of monitoring equipment required by the POTW to implement their pretreatment program and a description of municipal facilities to be constructed for the monitoring or analysis of industrial wastes.

9. On or prior to __________, the permittee shall submit an evaluation of the financial programs and revenue sources necessary to implement their pretreatment program and to carry out the directives of their SUO which is acceptable to the Tennessee Division of Water Quality Control.

10. On or prior to __________, the permittee shall submit a detailed description of the methodology used to issue permits to the IU's. This methodology must be consistent with the provisions of their SUO and acceptable to the Tennessee Division of Water Quality Control. (Where contracts or joint powers of agreement are used substitute the appropriate term in place of the word: "permit").

11. On or prior to __________, the permittee shall issue all IU permits consistent with the provisions of their IU's.

12. On or prior to 30 days prior to submission of the POTW Pretreatment Program the permittee shall make available to the public a copy of their draft submission. (The permittee must comply with the requirements of 40 CFR Part 403.9 (d).)

13. On or prior to __________, the permittee shall submit a request for pretreatment program approval (and removal credit allowances approval, if desired).

## Exception to Pretreatment Program Requirements

If the industrial user survey required by Activity 1 of the pretreatment compliance schedule demonstrates that the POTW has no industrial user nor will have an industrial user via Section 301 (i)(2), then the permittee will be required to satisfy only Activities 1, 3, and 4 of the pretreatment compliance schedule.

## FIGURE 8-1

## EXAMPLES OF THE METHODOLOGY FOR SELECTION OF THE MOST CRITICAL LIMITS FOR ORDINANCE STANDARDS

| | | | ORDINANCE PROTECTION CRITERIA | |
|---|---|---|---|---|
| POLLUTANTS | NPDES PERMIT DAILY MAXIMUM (mg/1) | INHIBITION THRESHOLD (mg/1) | 24 HOUR FLOW COMPOSITE (mg/1) | INSTANTANEOUS MAXIMUM (mg/1) |
| Arsenic | 1.0 | 0.1 | 0.05 | 0.1 |
| Copper | 0.4 | 1.0 | 0.4 | 0.8 |
| Nickel | 3.0 | 1.0 | 0.5 | 1.0 |
| Silver | 0.05 | 5.0 | 0.05 | 0.1 |

## TABLE 8-3

## HAZARDOUS WASTE "EP TOXICITY" RESULTS FROM SLUDGE LEACHATE

## JUNE 30, 1980

| Pollutant | Threshold Criteria Concentration (mg/l) | Leachate Concentration (mg/l) |
|---|---|---|
| Arsenic | 5.0 | 0.008 |
| Barium | 100.0 | 0.65 |
| Cadmium | 1.0 | 0.02 |
| Chromium | 5.0 | <0.01 |
| Copper | -- | <0.01 |
| Lead | 5.0 | <0.1 |
| Mercury | 0.2 | <0.0002 |
| Nickel | -- | 2.03 |
| Selenium | 1.0 | <0.005 |
| Silver | 5.0 | <0.01 |
| Zinc | -- | 2.4 |
| Phenol | -- | 0.038 |
| Endrin | 0.02 | <0.0001 |
| Lindane | 0.4 | <0.0001 |
| Methoxychlor | 10.0 | <0.0001 |
| Toxaphene | 0.5 | <0.002 |
| 2, 4-D | 10.0 | <0.01 |
| 2, 4, 5-TP | 1.0 | <0.005 |
| Final pH of Extract | -- | 5.0 |
| % Allowable 0.5N Acetic Acid Used |  | 34.5 |

Each pollutant limit was developed through a mass balance of the pollutant in the sewer system. The total load reported in the industrial permit applications was compared to the observed pollutant load at the treatment plant influent. A computer program was developed to perform these summations and to account for the inventory of pollutants. Also, the observed pollutant load at the influent was compared to the first table of the treatment plant influent standards (the protection criteria). Industrial Discharge Standards were selected for those pollutants which were causing or close to causing violations to the POTW influent standard. The actual numerical limits were selected by a combination of considering dilution in the sewer system by "backing a standard up the pipe" and inspection of data from all dischargers of the pollutant under consideration. In most cases, it was possible to select a cut-off point by this process for those industrial dischargers which had high concentrations due to poor housekeeping and/or wasteful processes and who were causing most of the violations at the treatment plant. The remaining standards were negotiated with the State Director and EPA. These standards are more stringent than would have been calculated by the above procedure; however, it was understood in the negotiations that as a better data base was developed and compliance with the plant's NPDES standards was achieved, the discharge standards could be adjusted if found to be too stringent. Controlling the discharge of these pollutants also provides a factor of safety for synergistic effects that may be causing some of the plant's operating problems.

To protect industry from having to install pretreatment that may be designed for more stringent standards than necessary, the City negotiated two major timetables for industrial compliance. The first schedule which must be completed by January 1, 1981, covered all pollutants currently exceeding the plant influent standards as shown in Table 8-4. The second schedule must be completed by January 1, 1983, and covers the remaining pollutants in the Table of Industrial Discharge Standards. With these factors in mind, a revised set of industrial effluent limits was developed. The limits shown in Table 8-5 have been approved by the State and EPA and are considered adequate in controlling the industrial dischargers to the sewer. Note that numerous pollutants have been dropped from this table. This was due to no control currently being warranted because of low loadings presently experienced at the treatment plant. However, the City has reserved the right to apply more stringent limits or to add additional limits, should this be necessary sometime in the future.

A comparison of the ranking of the Chattanooga standards with standards for metals in other municipal ordinances is shown in Figure 8-2. For these metals, it can be seen that the Chattanooga standards are quite liberal. Yet, based on the City's research, they are sufficient to protect the treatment works. The significance is the methodology. The limits for any given plant are subject to variation due to local conditions.

Locally, the impact of the new standards may be seen in Table 8-6 which shows a significant reduction in the number of industries which would be required to pretreat and that the total flow which was subject to pretreatment in the old standards has been reduced by two-thirds. It is estimated that required captial expenditures will be cut in half.

## TABLE 8-4

## CRITERIA TO PROTECT THE TREATMENT PLANT

| PARAMETER | INFLUENT LIMIT |
|---|---|
| Aluminum (dissolved)* | 15.00 mg/l |
| Antimony | 0.50 mg/l |
| Arsenic | 0.05 mg/l |
| Barium* | 2.50 mg/l |
| Boron * | 1.00 mg/l |
| Cadmium | 0.01 mg/l |
| Chromium | 1.50 mg/l |
| Cobalt* | 5.00 mg/l |
| Copper | 0.40 mg/l |
| Cyanide | 0.05 mg/l |
| Fluoride* | 10.00 mg/l |
| Iron | 5.00 mg/l |
| Lead | 0.10 mg/l |
| Manganese | 0.50 mg/l |
| Mercury | 0.015 mg/l |
| Nickel | 0.50 mg/l |
| Phenols | 1.00 mg/l |
| Selenium | 0.005 mg/l |
| Silver | 0.05 mg/l |
| Titanium-dissolved* | 1.00 mg/l |
| Zinc | 2.00 mg/l |
| Total Kjeldahl Nitrogen | 45.00 mg/l |
| Oil and Grease | 25.00 mg/l |
| Total Dissolved Solids | 1,875.00 mg/l |
| $BOD_5$ | ** |
| COD | ** |
| S.S. | ** |

*Deleted in revised NPDES permit (20 Aug, 1980) - these pollutants will not appear in the new criteria.

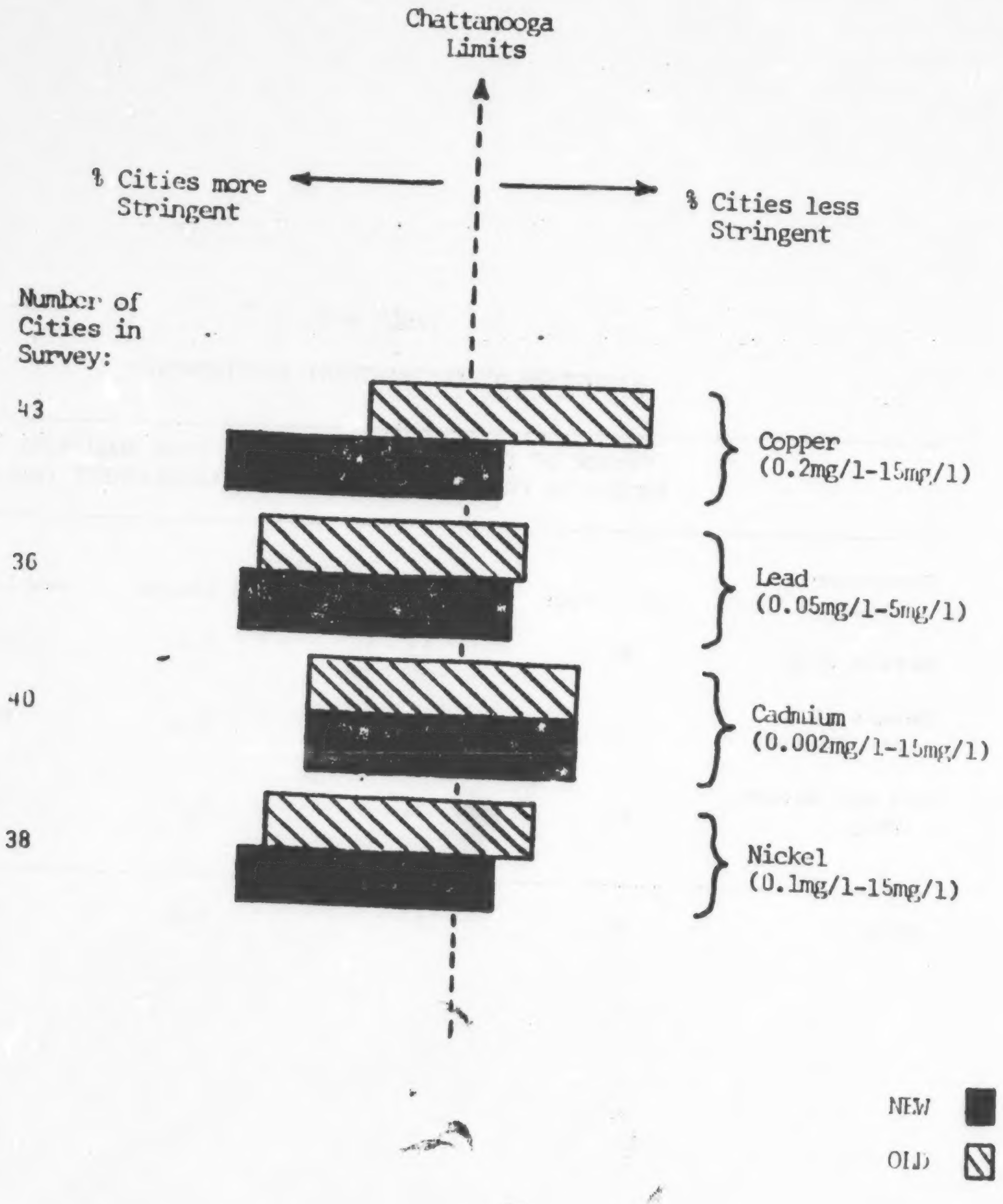
** Dependent on design capacity of treatment process.

## TABLE 8-5

## 1978 INDUSTRIAL EFFLUENT LIMITATIONS

| PARAMETER | MAXIMUM CONCENTRATION Mg/1 (24 -HOUR FLOW PROPORTIONAL COMPOSITE SAMPLE) | MAXIMUM INSTANTANEOUS CONCENTRATION Mg/1 (GRAB SAMPLE) |
|---|---|---|
| Arsenic | 1.00 | 2.00 |
| Cadmium | 1.00 | 2.00 |
| Chromium-total | 5.00 | 10.00 |
| Chromium-Hexavalent | 0.05 | 0.10 |
| Copper | 5.00 | 10.00 |
| Cyanide | 2.00 | 4.00 |
| Lead | 1.50 | 3.00 |
| Mercury | 0.10 | 0.20 |
| Nickel | 5.00 | 10.00 |
| Selenium | 1.00 | 2.00 |
| Silver | 1.00 | 2.00 |
| Zinc | 5.00 | 10.00 |
| Oil & Grease (Petroleum and/or Mineral origin) | 100.00 | 200.00 |

FIGURE 8-2



Graphical Comparison of Chattanooga Standards With Other Cities.

## TABLE 8-6

## REDUCTION OF PRETREATMENT REQUIREMENTS

| | NUMBER OF INDUSTRIES REQUIRING PRETREATMENT | | FLOW REQUIRING PRETREATMENT (MGD) | |
|---|---|---|---|---|
| Pretreatment required for: | Old Limits | New Limits | Old Limits | New Limits |
| Metals only | 53 | 15 | 7.0 | 0.2 |
| Metals (Oil and Grease) | 31 | 10 | 2.6 | 0.1 |
| Oil and Grease Only | 13 | 34 | 0.2 | 2.7 |
| TOTAL | 97 | 59 | 9.8 | 3.0 |

The plant technical staff has determined that by the time industries will have to begin compliance activities for the 1983 standards, several major changes in the environmental situation will have occurred. First, most of the National Categorical Standards will have been published by EPA as shown in Figure 8-3. As they are promulgated, they will administratively supersede Chattanooga's ordinance standards for the pollutants and industries in each National Standard. Industries subject to National Standards, however, will still have to comply with the City standards if the local standards are more stringent and/or if the ordinance controls pollutants not covered by the National Standards. It should be clear from the previous discussion that the National Standards are not needed for environmental protection but are included in Chattanooga's program solely because of Federal statutory and administrative requirements.

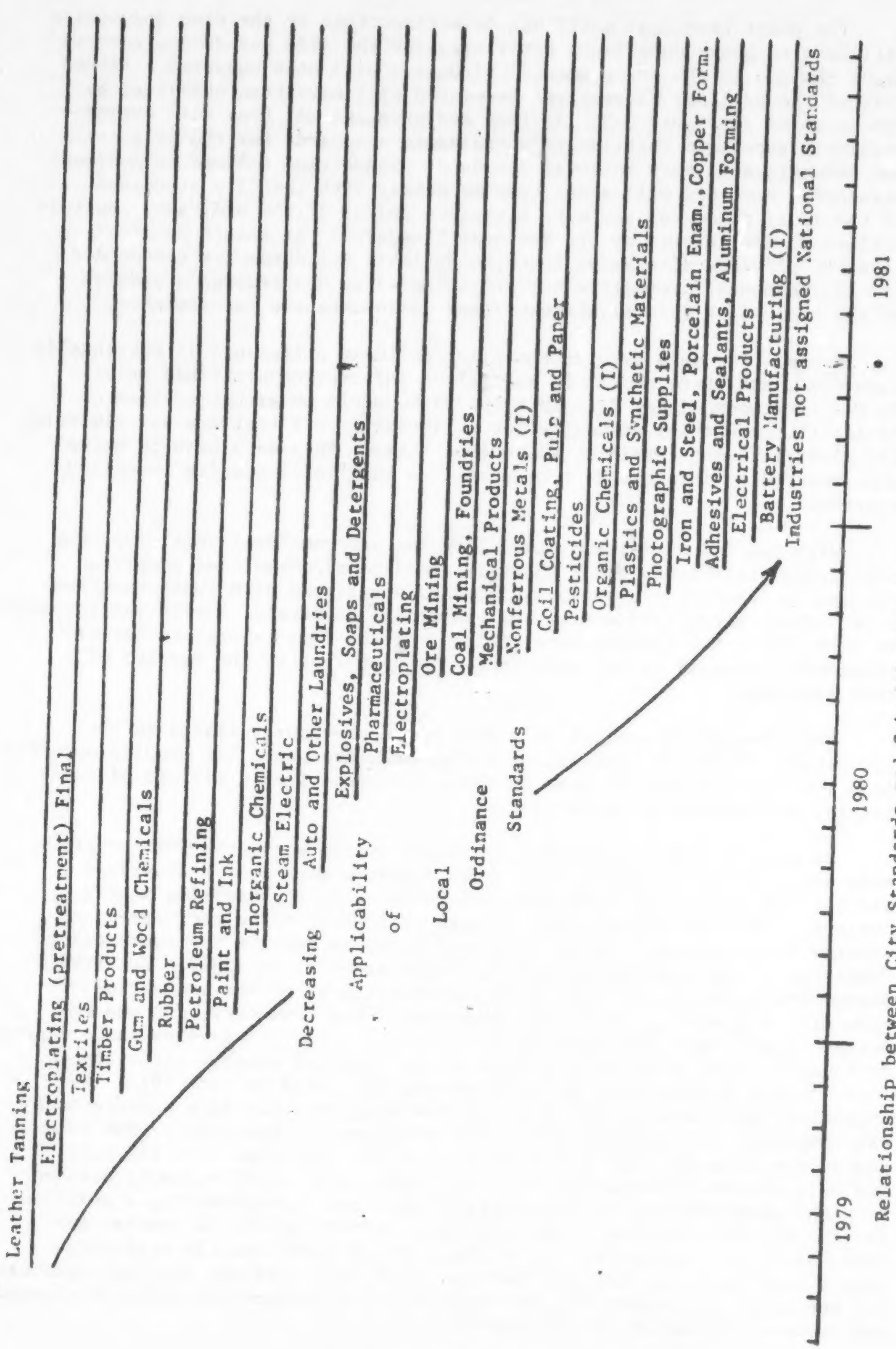
Second, the data base at the plant on these pollutants is continually expanding, and there should be sufficient information available prior to the first compliance date in the 1983 schedule to either confirm or revise the industrial standards for pollutant levels that are not violating the plant influent levels at the present time. This data base is being supplemented by information generated from the "local credits" sampling program.

With the industrial and plant sampling programs well under way, the monitoring staff conducted a thorough residential/commercial sampling program to identify the pollutant loading associated with those contributors. A one month residential and commercial wastewater survey was initiated in July 1978. The samples were analyzed by the City Laboratory for all parameters required by the ordinance. Table 8-7 shows the results of that sampling.

The values shown compare well with those previously listed in the literature. Also, no significant differences are noted for samples obtained from a purely residential area to those collected from a mixture of residential and commercial wastewater.

Because of concerns previously raised by industry, the POTW staff made every effort to ensure that those concerns were fairly addressed and that the industrial community was involved in the decision making process. This was accomplished through presentations to the Wastewater Appeals Board (created in the 1977 ordinance) and to the Environmental Committee of the Chattanooga Manufacturers Association (CMA). The five member Board, which was made up of representatives of the industrial, economic, engineering, and legal segments of the community, and the CMA worked closely with the POTW staff for almost a year to develop the ordinance revisions. These were finally drafted and accepted shortly after the long awaited Pretreatment Regulations were published in June 1978. No objections were made to the proposed standards once the mass balance study was completed and reported to the CMA Environmental Committee. The main reason for this was that it was obvious to all concerned that the City was only requesting controls and limit levels that were logically related to plant operation and environmental protection. Additionally, a modified version of the exception clause provides latitude to the Wastewater Appeals Board for flexibility in granting relief from specific standards. This clause lists ten factors that the Board must consider for each application. The applicant is responsible for supplying this information which is checked and reviewed by the engineering staff.

FIGURE 8-3



Relationship between City Standards and Schedule for National Standards

## TABLE 8-7

## RESIDENTIAL AND COMMERCIAL WASTEWATER CHARACTERISTICS

| PARAMETER | CONCENTRATION (Mg/1)<br>RESIDENTIAL | RESIDENTIAL/COMMERCIAL |
|---|---|---|
| $BOD_5$ | 250.000 | 240.000 |
| COD | 600.000 | 520.000 |
| TSS | 290.000 | 280.000 |
| $NH_3$-H | 21.000 | 23.000 |
| TKN | 35.000 | 26.000 |
| Phosphorus | 10.000 | 11.000 |
| Fluorides | 3.100 | 2.300 |
| Surfactants (MBAS) | 9.800 | 10.800 |
| Alumium | 1.100 | 1.020 |
| Antimony | 0.001 | 0.001 |
| Arsenic | 0.001 | 0.001 |
| Barium | 0.051 | 0.046 |
| Boron | 0.210 | 0.300 |
| Cadmium | 0.002 | 0.002 |
| Chromium | 0.011 | 0.024 |
| Cobalt | 0.001 | 0.001 |
| Copper | 0.120 | 0.100 |
| Cyanide | 0.010 | 0.010 |
| Iron | 2.100 | 1.700 |
| Lead | 0.026 | 0.028 |
| Magnesium | 6.100 | 5.900 |
| Manganese | 0.039 | 0.050 |
| Mercury | 0.001 | 0.001 |
| Nickel | 0.019 | 0.015 |
| Phenols | 0.020 | 0.040 |
| Selenium | 0.001 | 0.001 |
| Silver | 0.008 | 0.001 |
| Stronium | 0.029 | 0.016 |
| Tin | 0.010 | 0.049 |
| Titanium | 0.240 | 0.010 |
| Zinc | 0.400 | 0.370 |

To date, only two firms have requested this type of relief. Both submitted reports, as required by the ordinance, which certified that good management practices for pollution control were in effect. Various other factors such as impact on the POTW, whether the exception was for toxic pollutants, the age of the equipment, and water conservation were reviewed on a case-by-case basis by the Board. Three other firms have used this provision to obtain extensions on permit final compliance dates because of engineering problems.

The final draft revision of the ordinance was easily passed by the City Commission when letters of endorsement were presented from the CMA, the State of Tennessee, Region IV EPA, and the Appeals Board. This unanimous approval prompted one Commissioner to remark that to have gotten agreement from such diverse parties was "only a little short of miraculous." This firmly underscored the value of prior coordination with all interested groups. The ordinance is included as Appendix A of this Reader.

The City staff feels that the revised limitations placed on the industrial discharges to the system will adequately protect the treatment plant while requiring no unnecessary treatment by industry. This, therefore, will satisfy the goals of the Clean Water Act. It should not be inferred that the users welcomed these new restrictions. However, they at least understood the importance of the City standards which were designed to protect the plant operation.

## CURRENT PROGRAM

### Staff and Organization

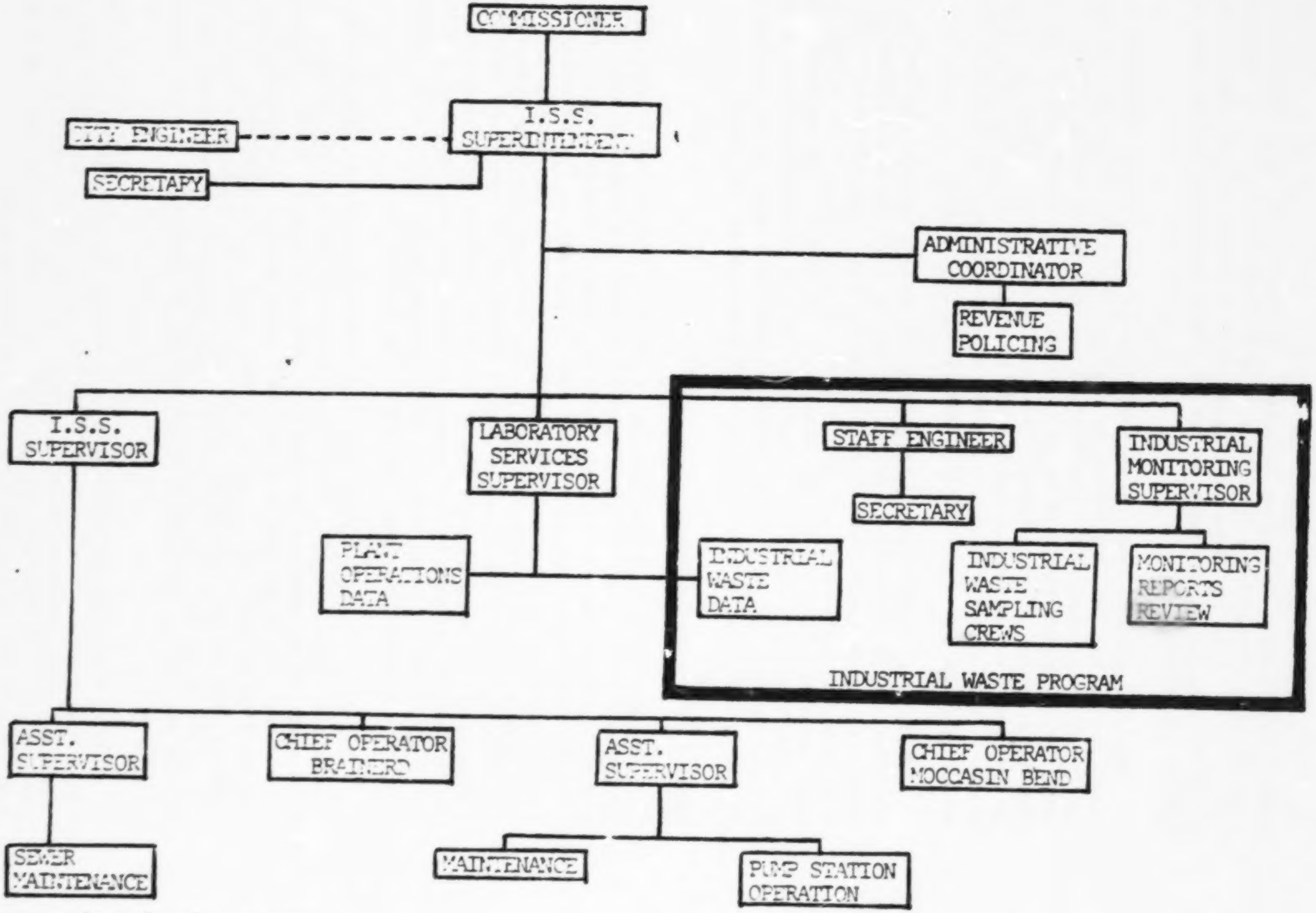
The present staff is organized as shown in Figure 8-4. This structure should have sufficient flexibility to expand or change as the program matures through the major stages of data gathering, pretreatment enforcement, verification monitoring, and updating of standards and rate schedules. While most of the original end-of-pipe sampling was performed by two two-man crews, only one crew is presently conducting verification sampling at this time due to personnel turnover. A second crew will be activated soon to enable the program to sample all permitted discharges once a year as required in the EPA program and to maintain the same level of responsiveness for verification sampling and local credits sampling.

### Permit and Ordinance Enforcement

The Industrial Wastewater Discharge Permits are the most visible extension of the Industrial Waste Ordinance and the authority of the Superintendent. The permit sets forth self-monitoring requirements for each industrial discharger as well as a compliance schedule for pretreatment if standards are exceeded. A permit may also contain other special conditions depending on the nature of the discharge. Ninety-five of the first City permits had some kind of pretreatment compliance schedule.

Monitoring industrial discharges for compliance is a critical part of the program, yet it would have been impossible to carry out adequately with the limited City staff. Therefore, it was decided that the periodic monitoring would be carried out by the affected industries with the City conducting annual unannounced verification monitoring. While this sounds

FIGURE 8-4


COMMISSIONER
I.S.S. SUPERINTENDENT
CITY ENGINEER
SECRETARY
ADMINISTRATIVE COORDINATOR
REVENUE POLICING
I.S.S. SUPERVISOR
LABORATORY SERVICES SUPERVISOR
PLANT OPERATIONS DATA
STAFF ENGINEER
SECRETARY
INDUSTRIAL MONITORING SUPERVISOR
INDUSTRIAL WASTE DATA
INDUSTRIAL WASTE SAMPLING CREWS
MONITORING REPORTS REVIEW
INDUSTRIAL WASTE PROGRAM
ASST. SUPERVISOR
CHIEF OPERATOR BRAINERD
ASST. SUPERVISOR
CHIEF OPERATOR MOCCASIN BEND
SEWER MAINTENANCE
MAINTENANCE
PUMP STATION OPERATION

Organization Chart

like "leaving the fox to guard the hen house," in reality no cases of data falsification have been detected. Additionally, many industries seem to have become more conscious of and responsive to their wastewater violations. Some of these violations were a result of poor housekeeping. Nineteen companies that have corrected their housekeeping problems are now in compliance.

The decision to require self-monitoring for a given pollutant is based on whether that pollutant is present at levels above the ordinance limit, at levels below the ordinance limit but above domestic levels, or at levels below domestic waste. Monitoring is classified in categories for the purposes of enforcement, surveillance, or not required, respectively. In addition, surcharge monitoring may be required for $BOD_5$, COD, and Suspended Solids. Each class of monitoring has an associated frequency depending on the size of the discharge as shown in Figure 8-5.

Forms were developed by the staff for making monitoring reports, with the method of analysis specified on the form for each parameter. This eliminated questionable or inadequate "kit" type analysis. The City also conducts monitoring at the request of a discharger to verify that compliance standards have been achieved. Monitoring can be requested by a discharger in addition to self-monitoring or verification monitoring but not in lieu of permit requirements, and this monitoring is charged to the industry at a base rate set in the surcharge ordinance.

## Local Credits Monitoring

Shortly after the publication of general pretreatment regulations in June of 1978, Chattanooga initiated a program to gather data to support a local credits request for the Moccasin Bend Treatment Plant. The regulation defined consistent removal as the "reduction in the amount of a pollutant or alteration of the nature of a pollutant in the influent to a POTW to a less toxic or harmless state in the effluent which is achieved by the POTW in 95% of the samples taken" according to specified procedures. Essentially, these procedures were directed towards obtaining samples representative of yearly and seasonal conditions and required a minimum of 12 discrete influent and effluent samples to be composited each day for three consecutive days each sampling period.

The City sampling crews have collected samples for information on consistent removal during nine quarterly sampling periods since July 1978, with each period seven days long and having 24 sample collections per day. Four locations were sampled each hour as shown in Figure 8-6 which resulted in a total of 96 discrete samples collected per day. Effluent samples were taken nine hours later than influent samples to allow for the plant hydraulic detention time. The sampling and analysis was documented exactly in accordance with the EPA procedures for 31 pollutants of interest.

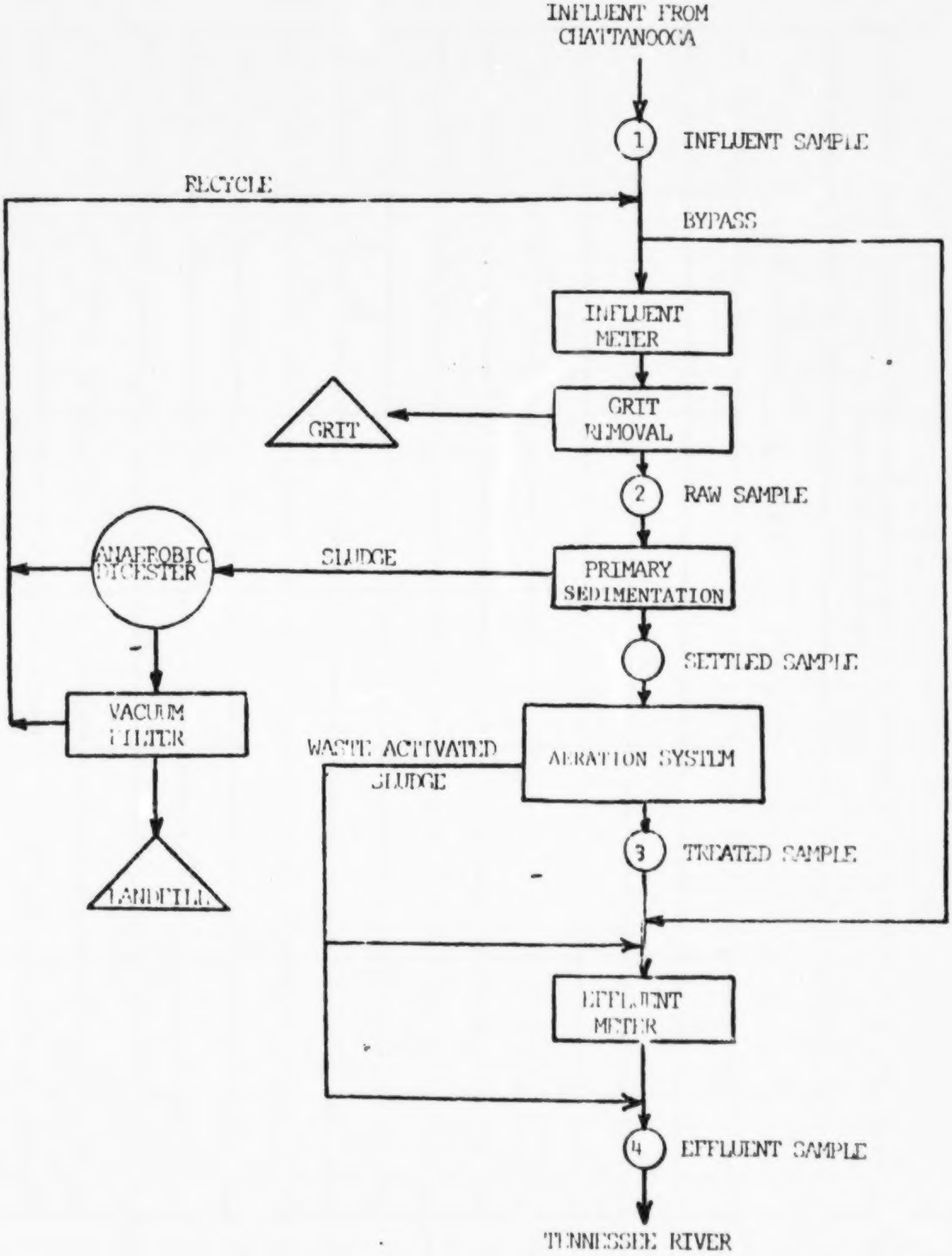
Under the current regulatory procedures and definitions, the City could not request local removal credits. Each toxic pollutant had at least two days annually that showed no removal or a higher level of pollutant in the effluent than in the influent. This meant that the 95% confidence level could not be met to verify "consistent removal."

## FIGURE 8-5

| Industrial Discharge Volume | Sample Type | SAMPLING INTERVAL | | | | | |
|---|---|---|---|---|---|---|---|
| | | Weekly | Semi-Monthly | Monthly | Quarterly | Semi-Annually | Annually |
| Greater than 100,000 gpd | E | X | | | | | |
| | SV | | | X | | | |
| | SC | | | | | X | |
| 100,000 gpd to 50,000 gpd | E | | X | | | | |
| | SV | | | | X | | |
| | SC | | | | | | X |
| 50,000 gpd to 10,000 gpd | E | | X | | | | |
| | SV | | | | | X | |
| | SC | | | | | | X |
| 10,000 gpd to 800 gpd | E | | | X | | | |
| | SV | | | | | | X |
| | SC | | | | | | X |
| Less than 800 gpd | E | | | | X | | |
| | SV | | | | | | X |
| | SC | | | | | | X |

Monitoring Schedule for Enforcement (E), Surveillance (SV), and Surcharge (SC) Reports

FIGURE 8-6


INFLUENT FROM CHATTANOOGA
1
INFLUENT SAMPLE
RECYCLE
BYPASS
INFLUENT METER
GRIT
GRIT REMOVAL
2
RAW SAMPLE
ANAEROBIC DIGESTER
SLUDGE
PRIMARY SEDIMENTATION
SETTLED SAMPLE
VACUUM FILTER
WASTE ACTIVATED SLUDGE
AERATION SYSTEM
3
TREATED SAMPLE
LANDFILL
EFFLUENT METER
4
EFFLUENT SAMPLE
TENNESSEE RIVER

Local Credits Sampling Diagram

Failure to achieve this "consistent removal" by the EPA standards at the Moccasin Bend Plant was attributed to the fact that the seven day sampling period did not allow for the 21 day detention time in the anaerobic digesters. Since most of the toxics discussed in the Chattanooga study were metals and therefore conservative in nature, it is expected that the recycle load from the digesters caused fluctuations in the metal concentrations downstream from the influent sampling point that were unrelated to the influent load on the day sampled. Nonetheless, averages of the data from this study and averages of 130 additional days show an overall removal of these pollutants. Additionally, metals have been shown to accumulate in the primary sludge solids indicating removal of metals from the effluent. A sludge analysis is shown in Table 8-8. As shown earlier, these levels do not cause the results of the EP toxicity test to exceed the hazardous waste limits.

The experience of the local credits program at Moccasin Bend is not unique, and the situation in Chattanooga would likely be repeated in virtually any plant having a unit process with a detention time longer than the required sampling period. Yet, many of these plants would also be able to show long term removals. The problem of getting permission to apply for local credits has been complicated by: 1) the requirement to have an approved pretreatment program; 2) the requirement to have the year long local credits study completed by the time a POTW applies for its program approval (or be forced to wait until its permit is reissued); and 3) the unresolved question of periodic reverification of removals. These difficulties make it unlikely that any POTW would succeed in demonstrating removals or that many would even attempt to take advantage of the relief granted by Congress in the 1977 Clean Water Act Amendments. From Chattanooga's perspective, the problem seems to be one of how EPA defined the program rather than whether removals were actually being achieved.

Recently, the draft revisions of 40 CFR Part 403 became available. These revisions published in October 1979 provided for an alternate methodology to calculate removals based on 12 monthly samples. The City staff feels that the 47 days of sampling checked so far provide a superior data base for its local credits request. Also, discussions with EPA's Office of General Counsel have indicated that the City may be able to use the data collected on the "raw" and "treated" sample as a basis to claim removals when the new plant expansion is complete. The reason for this is that this set of data would be more representative of a plant which has a system to dispose of the waste activated sludge. Removals calculated by this revised method are based on an average of the lowest 50% of the data points or the lowest six data points (whichever number of points is greater). If there are less than eight usable samples, the Approval Authority may approve alternate means to calculate "consistent removal."

The results of 13 of those pollutants which were on the list of 129 toxics are shown in Table 8-9. Based on these results, the City made the first application in Region IV for verification of consistent removal of those 13 pollutants. The State of Tennessee and the Region have approved this request. If Part 403 is modified as proposed, then the City will be able to base a request for local credits on the consistent removal already documented without going through another lengthy technical review. Time is most critical at this point because industries are already having to begin planning for pretreatment design, and they need to know as soon

## TABLE 8-8

## DIGESTED PRIMARY SLUDGE SOLIDS ANALYSIS
## MOCCASIN BEND TREATMENT PLANT

May 19, 1980

| Toxic Pollutants on NPDES Permit | Average % of Dry Solids | Average Pounds/Dry Ton |
|---|---|---|
| Antimony | * | * |
| Arsenic | * | * |
| Cadmium | 0.004 | 0.09 |
| Chromium | 0.04 | 0.76 |
| Copper | 0.028 | 0.55 |
| Cyanide | * | * |
| Lead | 0.030 | 0.62 |
| Mercury | 0.0005 | 0.011 |
| Nickel | 0.01 | 0.22 |
| Phenol | * | * |
| Selenium | * | * |
| Silver | 0.019 | 0.04 |
| Zinc | 1.13 | 22.50 |

* Data Not Available

## TABLE 8-9

## SUMMARY OF LOCAL CREDITS SAMPLING AS OF DECEMBER 1979

| Toxic Parameter | Number of One Week Sampling period * | Number of Data Point ** | Overall Average % Removal *** | 403.7 % Removal July 78-Oct. 79+ | 403.7 % Removal Latest 4 Quarters |
|---|---|---|---|---|---|
| Antimony ++ | 5 | 31 | 31.5 | -- | -- |
| Arsenic ++ | 5 | 30 | -- | -- | -- |
| Cadmium | 6 | 41 | 54.1 | 34.6 | 29.1 |
| Chromium | 5 | 35 | 55.8 | 31.7 | 24.9 |
| Copper | 6 | 42 | 70.7 | 54.6 | 46.5 |
| Cyanide ++ | 6 | 16 | -- | -- | -- |
| Lead | 6 | 42 | 66.7 | 53.2 | 49.6 |
| Mercury ++ | 5 | 24 | -- | -- | -- |
| Nickel | 6 | 42 | 40.2 | 18 | 14.9 |
| Phenol | 6 | 25 | 61.8 | 35.8 | 20.9 |
| Selenium +++ | 5 | -- | -- | -- | -- |
| Silver | 5 | 34 | 60.1 | 35.5 | 39.2 |
| Zinc | 6 | 42 | 62.8 | 43.6 | 50.0 |

* Sampling was performed for one seven day week per calendar quarter.

** Number of valid data points as determined by 40 CFR 403.7; some were discarded because they were below the limit of detection; also, not all parameters were measured for seven days.

*** Arithmetic mean of percent removal between sampling point #2 and #3.

+ Criteria as proposed on October 29, 1979.

++ Averages showed a "negative" removal possibly due to digester recycle having a 21 day detention time which is greater than the seven day monitoring period.

+++ All Selenium concentrations were below the limit of detection.

as possible what credits will be available for the program to be of any worth. The foregoing demonstrates that the City of Chattanooga is strongly committed to local credits. However, the City believes that this complicated program, which costs about 20% of the program budget, would not even be needed if Categorical Standards were not required in Chattanooga.

The whole purpose for the City to request local removal credits approval is to revise the Categorical Standards to the least stringent level that will still accomplish plant and environmental protection. Once the removals for the Moccasin Bend Plant had been calculated as in Table 8-9, the technical staff attempted to apply these credits to the Electroplating Standard, which is the only current final Categorical Standard. The top part of Table 8-10 shows the Categorical Standards as published and as revised. These revised standards do not take into consideration the reduction factor that will be applied to account for POTW bypasses and are, therefore, an optimistic estimate. The appropriate City Standards are shown for comparison.

The City Standards were developed through a logical process directed towards protecting the plant and preventing pass-through. Therefore, they do not require any redundant treatment by industry. The discharges from the seven platers in Chattanooga likely to be affected by the Categorical Standards were analyzed and the violation concentrations are shown in the lower part of Table 8-10. Several interesting things are revealed by this comparison. First, even with the most optimistic estimate of local removal credit, six companies will have to install some kind of pretreatment or extra source control for toxics. If the standards are changed as proposed in the July 3, 1980, Federal Register, then four of the seven would have to pretreat. Second, there are seven violations of EPA Categorical Standards that do not exceed the discharge standards required by the City for plant protection, meeting NPDES standards, or sludge protection standards. Third, there are five violations of the City standards that the National Standards do not control. The City will enforce its ordinance standards in these cases even though the categorical standards do not require pretreatment.

The City's data illustrates that the National Categorical Standards in many cases are not adequate to accomplish environmental protection. It is particularly interesting to note that the City's standard requiring pretreatment of the total cyanide discharge by Industry D in Table 8-10 (which is not controlled by the Categorical Standard) will result in more pounds of cyanide removed than the Categorical Pretreatment Standard applied to Industry B (where no pretreatment is required by the City Standard). The cyanide removal by required pretreatment is 5.53 lb/day compared to 2.01 lb/day, respectively.

## Funding - User Charges and Surcharges

Up to January 1, 1980, the City's pretreatment program was funded completely by user charges. However, the City Code has been amended to include surcharges, ICR (Industrial Cost Recovery), and other specific charges as required in EPA Construction Grant Regulations. The principal source of new revenue will be from high strength surcharges and revenue is estimated at about $440,000, about 20% of the City's O&M budget for 1980.

## TABLE 8-10

Comparison of Categorical Standards, Revised Standards, and Local Standards Showing Local Electroplating Violations

| Industry | Pollutant → | Ag | CN* | Cu | Ni | Cr | Zn | total metals | CNA*** | Pb | Cd |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | City Standard (mg/1) → | 1.0 | 1.0 | 5.0 | 5.0 | 5.0 | 5.0 | -- | -- | 1.5 | 1.0 |
| | National Standard (mg/1) → | 0.5 | 0.23 | 1.8 | 1.8 | 2.5 | 1.8 | 5.0 | 1.5 | 0.3 | 0.5 |
| | Revised Nat. Std. (mg/1) → | 0.82 | -- | 3.36 | 2.12 | 3.33 | 3.6 | *** | -- | 0.60 | 0.70 |
| Industry | Flow (gpd) | | | | | | | | | | |
| A | 250,000 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| B | 149,000 | -- | 1.85 | 3.4 | -- | -- | 3.1+<br>38+ | 43 | -- | -- | -- |
| C | 47,240 | -- | -- | -- | 2.69 | -- | -- | -- | -- | -- | -- |
| D | 5,190 | -- | 130 | -- | 19 | -- | -- | -- | 130++ | -- | -- |
| E | 3,315 | -- | -- | -- | -- | 20.9 | -- | -- | -- | 0.76 | -- |
| F | 1,000 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| G | 800 | -- | -- | -- | -- | 23 | 8.4 | -- | -- | 0.88 | -- |

/ / Not covered by National Categorical Standards
* Total Cyanide
** Cyanide amenable to Chlorination
*** No credit calculated
+ This plater has 4 permitted discharges
++ The total cyanide violation is assumed to violate the CNA standard also.

This will pay for increased operation and maintenance costs to treat excess $BOD_5$, COD, and Suspended Solids. The increased costs also include the costs of the pretreatment program as shown in Table 8-11. Some industries questioned surcharging for both $BOD_5$ and COD. In actuality, the $BOD_5$ and COD charges were calculated separately and do not constitute double charging. An industry with a relatively compatible waste would not notice the difference in its bill if the rate structure had been set up for $BOD_5$ alone. However, an industry discharging a waste with a high COD to $BOD_5$ ratio or an otherwise incompatible waste will pay more. This policy has been reviewed, and the City has decided that the final surcharges will not cover COD since that is not on the plant NPDES permit, and there is not evidence that there is actually a higher O&M cost associated only with high COD. The interim rate structure, shown in Table 8-12, was developed by the POTW staff. The final rate structure is being developed under an EPA contract by the City's consultant engineers.

## Federal Pretreatment Program

The previously described activites of ordinance revision and sampling programs were complicated by the fact that general pretreatment regulations were first proposed in February 1977, barely a month after the passage of City's first comprehensive ordinance. As stated earlier, doubts were cast upon the usefulness and applicability of the 1977 ordinance by several groups with a vested interest in its contents.

The City agreed that the ordinance should be revised but felt that the most prudent course to follow would be to wait until the regulations were promulgated. The 18 month delay until the final rule was published proved to be an agonizing period of frustration which strained the patience and credibility of all participants in the local program development. During this period, the City was actively gathering data to support needed limitation revisions as described earlier.

The administrative requirements and content of the final regulations closely paralleled and added to the requirements of the Step II Grant conditions for Chattanooga discussed earlier. Most of the tasks required for an approved 403 pretreatment program, particularly the development of the sewer ordinance, have already been undertaken in order for the City to comply with the special grant agreements.

Additional tasks required by the regulations and included in the 1978 ordinance were:

- Development of procedures to notify industrial contributors of their responsibilities and to notify them of applicable local and National Pretreatment Standards. Although not required of the City prior to EPA program approval, the POTW staff has been notifying dischargers each time a Categorical Standard has been promulgated or proposed. This service has helped to enhance the rapport between the City and the industrial dischargers and is relatively simple to accomplish by using a computer program to sort for SIC Codes.

- Compliance with public participation requirements in the enforcement of National Standards to include annual public notice of industrial users not in compliance with the program.

## TABLE 8-11

## PROJECTED ANNUAL PRETREATMENT PROGRAM COSTS (1980)

| Activity | Lab Analysis | Sampling | Equipment | Administration | Total |
|---|---|---|---|---|---|
| Industrial Sampling and Compliance Monitoring (183 permits checked avg. 2 days/year) | $42,441 | $18,985 | $ 6,578 | $16,100 | $ 84,104 |
| Local Credits Sampling in-plant (7 days/quarter at 4 plant locations) | 12,988 | 7,448 | 767 | 12,100 | 33,303 |
| Quality Control | 5,543 | -- | 330 | 3,400 | 9,273 |
| Permit Writing,<br>Appeals,<br>Compliance Checking,<br>Data Processing<br>Typing,<br>Misc., Adminstration | -- | -- | 4,392 | 32,400 | 36,792 |
| TOTAL | $60,972 | $26,433 | $12,067 | $64,000 | $163,472 |

## TABLE 8-12

## SCHEDULE OF INTERIM SEWER RATES

| Meter Rates | Uniform O & M User Charge | Service Charge | Total |
|---|---|---|---|
| For the first 50,000 gal. | $0.181 | $1.028 | $1.209 |
| For the next 50,000 gal. | $0.181 | $0.885 | $1.066 |
| For the next 100,000 gal. | $0.181 | $0.751 | $0.932 |
| For the next 250,000 gal. | $0.181 | $0.761 | $0.942 |
| For the next 300,000 gal. | $0.181 | $0.618 | $0.799 |
| For the next 500,000 gal. | $0.181 | $0.565 | $0.746 |
| For the next 750,000 gal. | $0.181 | $0.508 | $0.689 |
| For the next 1,000,000 gal. | $0.181 | $0.490 | $0.671 |
| For all over 3,000,000 gal. | $0.181 | $0.293 | $0.474 |

### SURCHARGE RATES

| | |
|---|---|
| Pounds of BOD over 300 mg/l | $0.0105124 |
| Pounds of COD over 600 mg/l | $0.0066148 |
| Pounds of Suspended Solids over 400 mg/l | $0.0143145 |

The ordinance controls originally required by the grant have been structured to have the legal authority to implement the formal pretreatment program called for by the regulation. In many cases, this was accomplished by incorporating the language from the Federal Register directly into the ordinance.

A major flaw in the current 1978 ordinance is the lack of any significant civil or criminal penalty for violators. In Tennessee, local governments do not have the authority to require a fine greater than $50.00 for each ordinance violation. When the City makes formal application for program approval, it will rely on a provision of Tennessee law authorizing the imposition of higher civil penalties at the State level as evidence of preemption. Additionally, the City attorneys have discussed this problem with State representatives and believe that, since the Tennessee legislature has traditionally been slow to act in the environmental area, that EPA pressure will be needed to achieve immediate results. If this cannot be accomplished, the attorneys believe that all of the local governments required to develop pretreatment programs in the State could successfully petition the Tennessee legislature for relief.

Enforcement of Chattanooga Ordinance Standards against industrial users outside the City limits is another significant problem since sewer discharges are received from across City, County, and State lines. So far, no users outside the City have challenged the legal validity of these permits. This is attributed to basic acceptance by industry of the importance of discharge control and the fairness and reliability of the current ordinance standards. However, the City is working on developing contracts with affected industries to cover this deficiency.

Other municipalities required to tie onto the Chattanooga system as part of the area wide 208 plan will sign contracts which include a commitment to adopt the essential elements of the Chattanooga City Code. The POTW staff feels that eventually the system will be converted into a district with the power to pass its own ordinances. This approach will be much less cumbersome than the present system.

## National Pretreatment Costs

The City believes that the EPA estimated monitoring costs for municipalities and industries, as reported in the supplementary information preceding the final regulation, were inadequate and misleading. The EPA estimated total cost (adjusted for the Moccasin Bend Plant being larger than the "average" plant of 16-33 MGD) for the 1979-1983 period was $143,451. This represented the net local share of the costs estimated by EPA after Federal funding. Based on experience in the City of Chattanooga, the monitoring costs alone for one year will be more than the EPA adjusted estimate for five years of implementing the regulatory requirements. The actual cost to the City for the initial sampling was $161,854 for 70 discharges from 45 of the largest industries. By today's guidelines on construction grants from EPA, this type of end-of-pipe sampling is being discouraged; however, the POTW staff feels that it could not have dealt with the enormous magnitude of the pretreatment problem in Chattanooga without the high confidence level stemming from data gathered in the City's sampling program.

The industrial community will also be hit hard. One consultant estimated that industrial monitoring costs in Chattanooga will be about $780,000 per year or about $6,000 annually per industry to accomplish the minimum sampling required by the City ordinance and permits. Table 8-13 shows that for the Electroplating Standards, the analysis costs alone will triple without concurrent increased environmental or administrative benefits.

## Problems with National Categorical Standards

The City believes that EPA miscalculated the cost of compliance with regulatory requirements by a factor of 13 with their estimated cost of $460 per year per industry. For this reason, the City feels that the EPA needs to make a very thorough analysis of the environmental benefits versus the cost of adding the National Categorical Standards to a program which already is likely to cost much more than its proposed price tag. The City staff appreciates that estimating this cost before publication of the categorical standards would have been a difficult task but nevertheless would have liked to see the results of an Economic Impact Statement if EPA had been required to evaluate the full national cost of the pretreatment program and strategy.

The City staff also questions the "parity" argument used by EPA to support national standards because water quality standards take precedence for many direct dischargers who would otherwise be regulated by a less stringent national standard. Since the primary concern for direct dischargers is really with controlling the pollutant load to the stream, they argue that the "parity" concept is invalid and should not be applied to indirect dischargers, especially in those cases where there are good local programs structured to meet statutory and regulatory objectives and controlling the pollutant load to receiving waters.

From the City's perspective, programs that demonstrate that the main goals of the plant and environmental protection can be achieved by local standards should be incorporated into those POTW's NPDES permits in such a manner to allow those cities the authority to operate independently of the national categorical standards. Such independent operation, they believe, should be authorized only so long as the control authority continues to meet its NPDES permit requirements and sludge criteria. They believe this could be accomplished by amending the Clean Water Act to authorize local agencies not to enforce categorical standards if they have approved pretreatment programs.

The City believes that this approach would provide a positive driving force to encourage municipalities to develop local programs and to operate their POTWs as efficiently as possible. It will also focus attention on insuring that NPDES permits are comprehensive enough to include standards that are directly related to water quality protection. Publication of proposed water quality criteria in 1979 by EPA for the 65 toxics has made this goal realistic. Finally, these changes would help to dispell the reluctance of State and local agencies to take on the program as it is presently structured and to provide those agenices with positive incentives to convert the national goals into viable programs.

# TABLE 8-13

## ANNUAL INCREASE IN INDUSTRIAL SELF-MONITORING ANALYSIS COSTS DUE TO EPA NATIONAL STANDARDS FOR ELECTROPLATERS

| Industry Flow gpd | Existing Permit $ Analysis | Permit w/National Standards, $ Analysis * | Difference $ | New Compliance Requirements |
|---|---|---|---|---|
| 250,000 | 972 | 5,076 | 4,104 | none |
| 149,000 | 5,148 | 26,354 | 21,106 | Zn,CN,Cu, total metals |
| 47,240 | 294 | 1,658 | 1,364 | Ni |
| 5,180 | 358 | 879 | 521 | none |
| 3,315 | 150 | 671 | 521 | Pb |
| 1,000 | 52 | 580 | 528 | none |
| 600 | 2,819 | 3,223 | 404 | Pb |
| TOTAL | $9,793 | $38,441 | $28,648 | |

* Based on Commercial Lab Rates

# CHAPTER 9

## THE ROCKFORD EXPERIENCE

### GENERAL INFORMATION

The Sanitary District of Rockford serves an area of 36,772 acres, including the City of Rockford, Illinois' largest incorporated urban area west of Chicago. The area's water supply comes from glacial stream beds which are recharged in Wisconsin and run in a subterranean north to south stream valley, filtered through sands. Only shallow pumping of less than 300 feet is needed to gain access to the water. Rockford claims to have the second or third best quality water supply in the nation.

The service area includes a population of 217,000 as of 1975. Industry centers on the manufacture of fasteners, and Rockford calls itself the fastener capital of the world. In conjunction with the manufacture of screws, nuts, bolts, and related products there is a heavy concentration of electroplating activity with forty-two shops in the District's service area, many of them quite sizeable. An estimated 26 to 28 percent of the flow coming to the District is from plating waste with industry as a whole accounting for 56 to 58 percent of the total flow.

The District is governed by a five-member Board of Trustees, appointed for staggered three-year terms by the County. The District now encompasses both the Rockford urban area and Loves Park and will be adding Cherry Valley, an unincorporated area where the bulk of the local development is taking place, including the largest shopping center in the area. The City of Rockford has a mayoral/city council government, while Loves Park has a mayor and full-time administrator. The County is under a 28-member Board, four from each of seven districts, with a County administrator. The District's Board of Trustees may include no more than three of its five members from the same political party.

The Board of Trustees, partly as a result of the increased involvement of local industries with water pollution control problems, now has two members with backgrounds in industry: one a chemist, the other a public utility chairman. The involvement in the District Board has increased their understanding of all sides of the problem, and the District staff is hopeful that this will aid the future relationships with industry. In addition, a group of local plating industries has joined in hiring a consultant to monitor environmental regulations, including the activities of the District, where he is a frequent visitor. Notwithstanding his advocacy of industry, this further assures that communication is maintained.

The formation of the District in 1926 was meant to end discharges from storm sewers to the Rock River which, in its almost eutrophic state, was causing illness in swimmers at the beaches used by area residents. The District had a primary treatment plant and pumping station operational by 1932. The original system was designed for expansion to serve a population of 140,000 by 1946 and with major changes a projected 1970 population of 200,000. The forecast has proven accurate. The District has its own taxing powers and can levy up to 16.6 cents per one hundred dollars of assessed valuation plus a five cent public benefit tax and a three cent chlorination tax. A minimum billable user charge put into operation in April of 1975 provoked a court suit which was never tried. Instead, the suit was settled without trial when EPA approved a new ordinance which took effect December 1, 1976, instituting a user charge system based on quantity and quality of wastes. The ordinance established the legal basis of the District's current operations under the umbrella of the State of Illinois law for water treatment. The State, however, has no direct administrative or funding control over District operations beyond monitoring the District's performance.

In the mid-1960's, the District was confronted by toxics in the waste flows which killed off its digester, and a study showed that this was a result of the heavy metals and cyanide from industries in the service area. The District changed its process to vacuum filtration.

At the same time Rockford was trying to deal with the problems of industrial discharges, the State of Illinois was reconstituting its agencies establishing a State Pollution Control Board as the judicial arm and the Illinois Environmental Protection Agency as the regulatory arm of its water pollution control programs.

The result, during the 1970's, has been a gradual clampdown on dischargers, with the District's attention to its special problems and the need to identify toxics at the State level as part of the development of a user charge system and the need to monitor locally for billing purposes.

The State of Illinois has been granted authority for mangement of construction grants under Section 205(g), but a current court case has thrown into question the State's NPDES system. The case is now on appeal. The District does not expect to get any technical or legal assistance from the State in the development of its program either through 205(g) or through 208 planning funds. The District and the State are in agreement on their hopes of being able to adopt a strategy which permits going ahead with a program designed to cover metals and later adding responsibilities for toxic organics when they have developed the capability.

The Sanitary District has a total staff of 116 with about 20 in the engineering division, another 25 in the business office, and the remainder in plant operations which includes divisions for chemistry, plant maintenance, building and support services, and supervision of operations and industrial waste.

District officials see the pretreatment program as an expansion of their present efforts and have characterized it as something they can do but which involves increasing their present monitoring capability.

The District's treatment process is required to meet permit requirements of 20-25 but, in fact, meets a 10-12 standard during most of the year.

It met the 1977 deadline for secondary treatment. Shockloading is a persistent operational problem with loads containing cyanide or more complex mixtures of pollutants.

The District has an inspection system which takes samples in the area on a 24-hour basis using two vans equipped to collect samples. Each van carries a refrigerator, a hoisting device, and a staff of two and collects from eighteen composite samplers. The District laboratory performs 1,400 chemical analyses per week measuring for metals, cyanide, BOD, and solids. The District is investigating the possibility of installing a process type control analytical instrument to continuously analyze the plant influent for cyanide. This will help warn of cyanide slugs influent to the treatment plant and allow the District to shunt them elsewhere for holding and treatment at leisure. An industrial spill reporting provision in the new ordinance will also help somewhat.

The District does not claim that its toxics program was created to be a full-fledged pretreatment program since its developement was underway well before the advent of the national pretreatment effort. At present, there is no broad effort to fold in organic pollutants. The District sends samples for such analysis to private laboratories. A gas chromatograph will be purchased, and a chemist will be sent to get special training to expand capabilities in this area, providing confirmation of the suspected organics problem. In September 1979 the Burns & Roe Corporation, under contract with the U.S. EPA, sampled the treatment processes for one week and analyzed for the 129 priority pollutants. As of this writing, the results are not yet in. A similar sampling and analysis was done by the University of Washington in September 1979, although it was not as extensive. The District is patiently waiting for their total report from the surveyors.

On the adminstrative side, the advent of more sophisticated word processing equipment is expected to permit an automatic notification and billing process for industries and for reporting of industrial waste strengths.

To meet needs as foreseen earlier, the District now has primary capacity of 60 mgd and secondary capacity of 45 mgd, with added capacity to 60 mgd near completion. However, introduction of the user charge system has led to a drop in flows, due to sometimes drastic cutbacks in flows from industry as individual firms have decided to recycle cooling water or to self-treat. In 1975, flows were measured at 51 mgd including some five million due to infiltration/inflow in a year marked by record rainfalls. With the introduction of the user charge system, flows dropped to 36 mgd, and as of 1979 the District expects to be receiving a consistent 40 mgd. The result is that the plant which was planned for meeting 1985 needs may actually provide for needs through 1990 or 1995.

District staff say that if money is not forthcoming to permit a start-up this year, they will not be able to have a full program for two years; less if they are not required to get involved in the organics pollutant problem.

Depending on what future regulations say, they expect that there may be as many as 650 industries with pretreatment problems out of the 1200 in the area.

The District has applied for funding of $55,000 for the development of its pretreatment program, i.e., surveys, inspections, ordinance development. Additional funding will be requested after exact needs are determined. (For personnel see Table 9-1).

## LEGAL AUTHORITY

Rockford's existing ordinance and the umbrella State law give the District authority to carry out most of the duties called for in the Clean Water Act under Section 807(b) and (c) and Section 402(c)(8). The major question remaining is that of the District's right to inspect on private property. Their authority provides power to establish control through permit over the industrial user's contribution to the system if necessary to assure compliance, but this authority has not been used. The District follows a three-step review system which provides for their Board to authorize taking the matter to court. The court, through injunction, must act as a final agent to deny or to condition a user's contribution to the POTW flow or to levy fines.

In general, the District has avoided trying to establish permits or contractual arrangements in preference to working cooperatively with industries and believes that it has had more success with this procedure than would have been the case through more formal contractual arrangements. The capability of court enforcement if all else fails has thus far been sufficient to gain that cooperation.

District staff expect to move to a permit program as part of developing their approvable pretreatment program. The staff at the District along with legal counsel have already done a considerable amount of work drafting a pretreatment ordinance. This new ordinance will incorporate all of the new pretreatment program requirements such as legal authority, categorical pretreatment standards, and industrial permits. The permit section of the ordinance was difficult to design because of the staggered time release of national categorical pretreatment standards.

The District desires to have an operative discharge permit system now and not wait until all of the categorical pretreatment standards are released. To solve the problem, the District designed a two part discharge permit. The first part requires the industrial dischargers to comply with the District's present pretreatment standards or, for pretreatment purposes, the general prohibitive discharge limits. The second part will be for the various categorical discharge limits as they are released and will be enforced after pretreatment of wastewater subject to categorical standards. Eventually, in two to three years, the discharge permits will be combined into one with several subparts for the various categorical pretreatment standards. District staff believe that this would be necessary if the pretreatment standards were released in a timely manner.

The District, which analyzes samples along with industries, has gotten data and prosecuted on the basis of that data and, in other cases, has detected pollution before the industries engaged in self-monitoring. A continuing problem in this area is with the quality of outside laboratory work including not only industries' own laboratories but two consulting laboratories generally used in the area. The District has had a round

## TABLE 9-1

### SANITARY DISTRICT OF ROCKFORD
### PRETREATMENT PROGRAM DEVELOPMENT -- FORCE ACCOUNT TASK ALLOCATION
JULY 10, 1979

TIME ALLOCATION

| Section * | Personnel | Days | | $/Day | | Total Cost |
|---|---|---|---|---|---|---|
| I-A<br>Computer Inventory of Industries | Pretreatment Technician | 21 days | x | $48.08 | = | $ 1,009.68 |
| | Inspector | 28 days | x | $57.69 | = | $ 1,615.32 |
| | IWS Supervisor | 7 days | x | $57.69 | = | $ 403.83 |
| | Secretary | 14 days | x | $39.00 | = | $ 546.00 |
| I-B-1<br>Qualitative Survey & Plant Inspection | Pretreatment Technician | 28 days | x | $48.08 | = | $ 1,346.24 |
| | Inspector | 182 days | x | $57.69 | = | $10,499.58 |
| | IWS Supervisor | 91 days | x | $57.69 | = | $ 5,249.79 |
| | Secretary | 21 days | x | $39.00 | = | $ 819.00 |
| I-B-2bi<br>STP Sampling & Analysis for Priority Pollutants | Sampling Technician | 9 days | x | $53.36 | = | $ 480.24 |
| | Lab Technician | 1 day | x | $53.60 | = | $ 53.60 |
| | Chief Chemist | 3 days | x | $76.15 | = | $ 228.45 |
| | Dishwasher | 3 days | x | $28.00 | = | $ 84.00 |
| | Secretary | 1 day | x | $39.00 | = | $ 39.00 |
| II<br>Legal Authority Evaluation & Ordinance Drafting | Manager | 42 days | x | $118.38 | = | $ 4,971.96 |
| | IWS Supervisor | 42 days | x | $57.69 | = | $ 2,422.98 |
| | Chief Chemist | 7 days | x | $76.15 | = | $ 533.05 |
| | Inspector | 7 days | x | $57.69 | = | $ 403.83 |
| | Pretreatment Technician | 42 days | x | $48.08 | = | $ 2,019.36 |
| | Secretary | 42 days | x | $39.00 | = | $ 1,638.00 |

TABLE 9-1, continued

PRETREATMENT PROGRAM DEVELOPMENT -- FORCE ACCOUNT TASK ALLOCATION
JULY 10, 1979 - TIME ALLOCATION

| Section * | Personnel | Days | | $/Day | | Total Cost |
|---|---|---|---|---|---|---|
| III A & B<br>Evaluation of Financial Funding | Manager | 14 days | x | $118.38 | = | $ 1,657.32 |
| | IWS Supervisor | 21 days | x | $ 57.69 | = | $ 1,211.49 |
| | Chief Chemist | 21 days | x | $ 76.15 | = | $ 1,599.15 |
| | Secretary | 7 days | x | $ 39.00 | = | $ 273.00 |
| IV<br>Determination of Technical Information | Manager | 14 days | x | $118.38 | = | $ 1,657.32 |
| | IWS Supervisor | 28 days | x | $ 57.69 | = | $ 1,615.32 |
| | Chief Chemist | 7 days | x | $ 76.15 | = | $ 533.05 |
| | Secretary | 7 days | x | $ 39.00 | = | $ 273.00 |
| V-A<br>Designing a Monitoring Enforcement Program | IWS Supervisor | 21 days | x | $ 57.69 | = | $ 1,211.49 |
| | Manager | 3 days | x | $118.38 | = | $ 355.14 |
| | Inspector | 14 days | x | $ 57.69 | = | $ 807.66 |
| | Chief Chemist | 3 days | x | $ 76.15 | = | $ 228.45 |
| | Secretary | 14 days | x | $ 39.00 | = | $ 546.00 |
| | Pretreatment Technician | 14 days | x | $ 48.08 | = | $ 673.12 |
| V-B<br>Designing a Monitoring Enforcement Program | Manager | 7 days | x | $118.38 | = | $ 828.66 |
| | IWS Supervisor | 7 days | x | $ 57.69 | = | $ 403.83 |
| | Inspection | 7 days | x | $ 57.69 | = | $ 403.83 |
| | TOTAL......800 days | | | | | $48,641.74 |
| | | | | +14% | | 6,809.84 |
| | | | | | | $55,451.58 |

* Referenced to outline of December 1, 1978
Total of 800 mandays (3.08 manyears)

robin program of practice testing for cyanide, metals, and BOD. This has brought about some improvement in the quality of outside laboratory work, but the District prefers to split its samples with the industry as the best check on quality.

The District reports that despite extensive press coverage of the controversy which preceded introduction of the new user charge system with the court suit and adoption of the ordinance, it was still necessary to staff ten phone lines to handle inquiries when the system went into effect. The presence of small delinquencies in payments has been a continuing problem with 3,100 of 52,000 billable accounts presenting some delay, but only 150 of this number are forcing the agency to pursue the account all the way to the threat of disconnection. The acquisition of word processing equipment is expected to relieve the administrative burden connected with chasing minor delinquencies.

An amendment is being drafted to the present Illinois statutes based on the experiences with the program so far. At this writing, it was not clear whether it would be pressed by the District alone or by the Illinois Association of Sanitary Districts as a group, pending a meeting of IASD to consider the matter.

In regard to the need for court action, District officials noted that the legal costs of $12,000 have resulted in the recovery to the District of over $100,000 in payments.

The current ordinance has its roots in an earlier ordinance adopted in 1971. It was modified in 1976 to include a user charge system and then further amended to include the legal requirement for public hearings. The final adopted version followed the bringing of the court suit which was settled before actual trial. It includes charges for monitoring and added charges based on pounds of toxics to recover the sampling and analytical costs incurred by the District attributable to industry.

## RELATIONS WITH INDUSTRIES

The metals program brought about the need to develop a working relationship with industries in the area well in advance of most other agencies, and the District says that it now feels it has a rapport with local industries on toxics.

Industry acceptance of the District's efforts to date has covered a considerable range. Many of the major industries have been very co-operative; some have not. Some industries encountered problems when they invested in their own systems which failed to perform to the standards anticipated by consultants. The result in these cases has been a major investment by the industry in equipment which failed to accomplish the job. To gain compliance by some small shops which lacked both money and expertise, the District had to go to court. Some small shops had to go out of business. The District is concerned that major industries will drag their feet on implementation steps if money is short for capital expenditures when they must acquire the equipment needed.

The District already has procedures to identify and locate all the possible industrial users which might be subject to its pretreatment program.

The survey form shown in Figure 9-1 has been sent out covering the 21 industrial categories asking whether any of the 129 pollutants are involved. Survey results have not been tabulated yet. The principal problem pollutants introduced into the system are cyanide and metals with some pH problems occurring. The Illinois EPA also has sent out, through a private contractor, a separate survey form to Rockford industry as well as the rest of the State.

Industries are required to self-monitor according to volume. Those with flows above 500,000 gpd must monitor daily, those with less must monitor once a week. This includes sampling for metals, and the District spot checks for other pollutants. Samples are split between the industry and the agency.

District officials anticipate that when they move into dealing with organic pollutants, they will become involved with some industries which have not been concerned with the problem to date or which haven't been monitored as strictly as they will be. Some industries have had sampling used to set general rates for their class under the present system. Those industries producing toxics and metals realized their problems some years ago and have been fully involved by now.

In general, the District took the approach of going to industries early on in the process and feels it is better to get them involved at an early stage rather than waiting until the program is fully developed. The value is in giving industries some indication as to what are the likely future problem areas in order to eliminate surprises later on which only cause complications within a business' own planning processes.

## PRESENT STATUS AND FUTURE PROBLEMS

The District has a $62 million construction program underway which is 70% complete with all projects at Step II or beyond, somewhat ahead of schedule. In an effort to get first in line, the facilities plan went in for approval one month after publication of regulations. They are confident of funding from the State.

Regarding the deadline for approval of pretreatment programs, the District expects to have completed its work by June of 1982, in time for inclusion in the renewal of its NPDES permit.

The District feels it has the capability to accomplish the required activities to receive authorization to revise national discharge limits in categorical pretreatment standards including certifications as to compliance with Section 403.7(b) (4) of the regulations and Section 304 (g) of the Act.

The District is now wrestling with the equity of treatment for various plants resulting from differing characteristics of their flows. One plant, for example, has 300,000 gallons per day of plating waste together with 700,000 gallons of cooling water and other plant water and, therefore, meets its pretreatment limits through dilution. However, a small plating plant which does not have similar non-plating waste flows is faced with its inability to meet the same standard without investment in expensive equipment. The result is that the small plant must invest in equipment

## FIGURE 9-1

### TOXIC POLLUTANT SURVEY

Folio Number: __________

Name of Organization: __________

Street Address: __________

City & State & Zip Code: __________

Date: __________

Signature of Person Completing Form:

__________

......................................................................................................

| Priority Pollutant | KTBP | BTBP | BTBA | KTBA |
|---|---|---|---|---|
| 001 Acenaphthene | | | | |
| 002 Acrolein | | | | |
| 003 Acrylonitrile | | | | |
| 004 Benzene | | | | |
| 005 Benzidine | | | | |
| 006 Carbon Tetrachloride (tetrachloromethane) | | | | |
| 007 Chlorobenzene | | | | |
| 008 1,2,4-trichlorobenzene | | | | |
| 009 Hexachlorobenzene | | | | |
| 010 1,2-dichloroethane | | | | |
| 011 1,1,1-trichlorethane | | | | |
| 012 Hexachloroethane | | | | |
| 013 1,1-dichloroethane | | | | |
| 014 1,1,2-trichloroethane | | | | |
| 015 1,1,2,2-tetrachloroethane | | | | |
| 016 Chloroethane | | | | |
| 017 Bis (chloromethyl) ether | | | | |
| 018 Bis (2-chloroethyl) ether | | | | |
| 019 2-chloroethyl vinyl ether (mixed) | | | | |
| 020 2-chloronaphthalene | | | | |
| 021 2,4,6-trichlorophenol | | | | |
| 022 Parachlorometa cresol | | | | |
| 023 Chloroform (trichloromethane) | | | | |
| 024 2-chlorophenol | | | | |
| 025 1,2-dichlorobenzene | | | | |
| 026 1,3-dichlorobenzene | | | | |
| 027 1,4-dichlorobenzene | | | | |
| 028 3,3-dichlorobenzidine | | | | |
| 029 1,1-dichloroethylene | | | | |
| 030 1,2-trans-dichloroethylene | | | | |
| 031 2,4-dichlorophenol | | | | |
| 032 1,2-dichloropropane | | | | |
| 033 1,2-dichloropropylene (1,3-dichloropropene) | | | | |
| 034 2,4-dimethylphenol | | | | |
| 035 2,4-dinitrotoluene | | | | |
| 036 2,6-dinitrotoluene | | | | |
| 037 1,2-diphenylhydrazine | | | | |
| 038 Ethylbenzene | | | | |
| 039 Fluoranthene | | | | |
| 040 4-chlorophenyl phenyl ether | | | | |
| 041 4-bromophenyl phenyl ether | | | | |
| 042 Bis(2-chloroisopropyl) ether | | | | |
| 043 Bis(2-chloroethoxy) methane | | | | |
| 044 Methylene chloride (dichloromethane) | | | | |

| Priority Pollutant | KTBP | BTBP | BTBA |
|---|---|---|---|
| 045 Methyl chloride (chloromethane) | | | |
| 046 Methyl bromide (bromomethane) | | | |
| 047 Bromoform (tribromomethane) | | | |
| 048 Dichlorobromomethane | | | |
| 049 Trichlorofluoromethane | | | |
| 050 Dichlorodifluoromethane | | | |
| 051 Chlorodibromomethane | | | |
| 052 Hexachlorobutadiene | | | |
| 053 Hexachlorocyclopentadiene | | | |
| 054 Isophorone | | | |
| 055 Napthalene | | | |
| 056 Nitrobenzene | | | |
| 057 2-nitrophenol | | | |
| 058 4-nitrophenol | | | |
| 059 2,4-dinitrophenol | | | |
| 060 4,6-dinitro-o-cresol | | | |
| 061 N-nitrosodimethylamine | | | |
| 062 N-nitrosodiphenylamine | | | |
| 063 N-nitrosodi-n-propylamine | | | |
| 064 Pentachlorophenol | | | |
| 065 Phenol | | | |
| 066 Bis(2-ethylhexyl) phthalate | | | |
| 067 Butyl benzyl phthalate | | | |
| 068 Di-n-butyl phthalate | | | |
| 069 Di-n-octyl phthalate | | | |
| 070 Diethyl phthalate | | | |
| 071 Dimethyl phthalate | | | |
| 072 1,2-benzanthracene (benzo(a)anthracene) | | | |
| 073 Benzo(a)pyrene (3,4-benzopyrene) | | | |
| 074 3,4-Benzofluoranthene (benzo(b)fluoranthene) | | | |
| 075 11,12-benzofluoranthene (benzo(k)fluoranthene) | | | |
| 076 Chrysene | | | |
| 077 Acenaphthylene | | | |
| 078 Anthracene | | | |
| 079 1,12-benzoperylene (benzo(ghi)perylene) | | | |
| 080 Fluorene | | | |
| 081 Phenanthrene | | | |
| 082 1,2,5,6-dibenzanthracene (dibenzo(a,h)anthracene) | | | |
| 083 Indeno(1,2,3-cd) pyrene (2,3-o-phenylene pyrene) | | | |
| 084 Pyrene | | | |
| 085 Tetrachloroethylene | | | |

## Toxic Pollutant Survey (Continued)

| Priority Pollutant | KTBP | BTBP | BTBA | KTBA |
|---|---|---|---|---|
| 0 Toluene | | | | |
| 08. Trichloroethylene | | | | |
| 088 Vinyl chloride (chloroethylene) | | | | |
| 089 Aldrin | | | | |
| 090 Dieldrin | | | | |
| 091 Chlordane (technical mixture and metabolites) | | | | |
| 092 4,4-DDT | | | | |
| 093 4,4-DDE (p,p-DDX) | | | | |
| 094 4,4-DDD (p,p-TDE) | | | | |
| 095 Alpha-endosulfan | | | | |
| 096 Beta-endosulfan | | | | |
| 097 Endosulfan sulfate | | | | |
| 098 Endrin | | | | |
| 099 Endrin aldehyde | | | | |
| 100 Heptachlor | | | | |
| 101 Heptachlor epoxide (BHC-hexachlorocyclohexane) | | | | |
| 102 Alpha-BHC | | | | |
| 103 Beta-BHC | | | | |
| 104 Gamma-BHC (lindane) | | | | |
| 105 Delta-BHC (PCB-polychlorinated biphenyls) | | | | |
| 10 CB-1242 (Arochlor 1242) | | | | |
| 10. .CB-1254 (Arochlor 1254) | | | | |
| 108 PCB-1221 (Arochlor 1221) | | | | |
| 109 PCB-1232 (Arochlor 1232) | | | | |
| 110 PCB-1248 (Arochlor 1248) | | | | |
| 111 PCB-1260 (Arochlor 1260) | | | | |
| 112 PCB-1016 (Arochlor 1016) | | | | |
| 113 Toxaphene | | | | |
| 114 Antimony | | | | |
| 115 Arsenic | | | | |
| 116 Asbestos | | | | |
| 117 Beryllium | | | | |
| 118 Cadmium | | | | |
| 119 Chromium | | | | |
| 120 Copper | | | | |
| 121 Cyanide | | | | |
| 122 Lead | | | | |
| 123 Mercury | | | | |
| 124 Nickel | | | | |
| 125 Selenium | | | | |
| 126 Silver | | | | |
| 127 Thallium | | | | |
| 12 [illegible] | | | | |
| 129 [illegible],3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) | | | | |
| 130 Xylenes | | | | |
| 131 Alkyl epoxides | | | | |

KEY:

KTBP - Known to be present
BTBP - Believed to be present
KTBA - Known to be absent
BTBA - Believed to be absent

* Not listed in original consent decree

while the large plant does not even though the actual amount of metals, etc., from the larger plant is more.

As Tables 9-2 through 9-5 indicate, surveys done by the District show that the adoption of pretreatment for a specific metal bears no relation to the size of flow or the contribution in pounds of the pollutant. The Tables do not include names of the industries, which have been erased to avoid breaking the confidentiality promised by the District.

A significant problem is with the use of SIC categories which frequently do not reflect the actual processes within a particular industrial shop. The District uses the SIC with only slight modification but actual conditions are giving them problems.

Based on its experience, the District feels that it would not have different numbers for different categories which invites inequities although it tries to avoid them. They feel this would be fairer than trying to set different standards for the different processes since a pound of copper is the same no matter which plant and which process dumps it into the system.

The agency says it could go to mass loading restrictions but believes that the methods proposed in the Electroplating Subcategory Regulations are not manageable. It would be virtually impossible to monitor the rate of industrial production.

District staff advise anyone just starting out with a pretreatment program not to ignore different operations which take place within major operations of a plant and which might be producing pollutants not typical for that code.

The District has run into challenges of its sampling, questioning whether the sampling is proportional to a plant's flow throughout a day's output. This is not a problem with electroplating firms but with some others. One firm challenged the validity of sampling which was done every fifteen minutes. However, no one has been successful to date in any challenges to the validity and accuracy of the District's sampling data.

A principal O&M problem is parts inventory. The present manager said that when he arrived five and one-half years ago, there was no backup inventory. This is expected to be alleviated somewhat with the construction of a new inventory building to house some $5 million in backup parts and systems. For the time being, the agency follows a practice of manufacture, fabrication, bastardization, and cannibalizing because replacement parts are not available on a timely basis. The process is considered part of what is necessary to do business, but the thrust is to try to improve their present status.

Some other O&M problems have resulted from the unforeseen or the overlooked, as when a freeze hit the unheated and unvented rag room and when new equipment failed to perform.

Operators have written programs and are generally trained within the District with extra training through an outside course (The Sacramento State Operators Training Course) so that they can pass an Illinois State test within the required 18-month time period.

## TABLE 9-2

## INDUSTRIAL TOXIC POLLUTANT LOADING

### YEAR III, QUARTER 4
(June 7, 1978 - November 29, 1978)

| CADIUM | | COPPER | |
|---|---|---|---|
| Lbs/Qts | Percent | Lbs/Qts | Percent |
| 2709 | 46.5 | 4150* | 32.7 |
| 2101 | 36.0 | 1650* | 24.1 |
| 329 | 5.6 | 1430 | 11.3 |
| 210 | 3.6 | 1172* | 9.2 |
| 176 | 3.0 | 1098 | 8.7 |
| 66 | 1.1 | 700 | 5.5 |
| 55* | 0.9 | 576 | 4.6 |
| 49 | 0.8 | 298* | 2.3 |
| 30* | 0.5 | 281* | 2.2 |
| 30* | 0.5 | 225 | 1.8 |
| 18* | 0.3 | 215* | 1.7 |
| 11* | 0.2 | 198 | 1.6 |
| 9* | 0.2 | 192* | 1.5 |
| 8* | 0.1 | 139* | 1.1 |
| 7* | 0.1 | 85 | 0.7 |
| 3* | 0.0 | 61 | 0.5 |
| 2* | 0.0 | 46* | 0.6 |
| 2* | 0.0 | 45* | 0.4 |
| 2* | 0.0 | 21* | 0.2 |
| 2* | 0.0 | 18* | 0.1 |
| 2 | 0.0 | 15* | 0.1 |
| 1 | 0.0 | 15 | 0.1 |
| 1 | 0.0 | 10* | 0.0 |
| 1* | 0.0 | 8* | 0.0 |
| 1* | 0.0 | 6 | 0.0 |
| 1* | 0.0 | 6* | 0.0 |
| 1* | 0.0 | 5 | 0.0 |
| 1* | 0.0 | 4* | 0.0 |
| 1* | 0.0 | 4* | 0.0 |
| 1* | 0.0 | 1* | 0.0 |
| 1* | 0.0 | 1* | 0.0 |
| 1 | 0.0 | 1* | 0.0 |
| 5,832 | 99.4 | 12,682 | 111.0 |

*Industries without Pretreatment for Cadium and Copper, respectively.

**Percent of POTW**

August 70 x 31 = 2,170 lbs/Mo.
September 60 x 30 = 1,800 lbs/Mo.
October 62 x 31 = 1,922 lbs/Mo.

Total 5,892 lbs/Qtr

% of POTW = $\frac{5,832}{5,892}$ x 100 = 99.0%

**Percent of POTW**

August 278 x 31 = 8,618 lbs/Mo.
September 290 x 31 = 8,700 lbs/Mo.
October 320 x 31 = 9,920 lbs/Mo.

27,238 lbs/Qtr

% of POTW = $\frac{12,682}{27,238}$ x 100 = 46.6%

## TABLE 9-3

## INDUSTRIAL TOXIC POLLUTANT LOADING

### YEAR III, QUARTER 4
### (June 7, 1978 - November 29, 1978)

| NICKEL | | CHROMIUM | |
|---|---|---|---|
| Lbs/Qts | Percent | Lbs/Qts | Percent |
| 1788 | 26.1 | 3613 | 25.4 |
| 1093* | 15.9 | 2412 | 17.0 |
| 989 | 14.4 | 1519 | 10.7 |
| 822* | 12.0 | 1374 | 9.8 |
| 425 | 6.2 | 1096* | 7.7 |
| 425* | 6.2 | 956* | 6.8 |
| 295 | 4.3 | 813 | 5.7 |
| 233 | 3.4 | 772 | 5.4 |
| 167* | 2.5 | 417 | 2.9 |
| 142 | 2.1 | 407 | 2.9 |
| 124* | 1.8 | 218 | 1.5 |
| 70 | 1.0 | 203 | 1.5 |
| 61 | 0.9 | 92* | 0.6 |
| 53* | 0.9 | 76* | 0.5 |
| 28* | 0.4 | 58* | 0.4 |
| 25 | 0.4 | 52* | 0.4 |
| 25* | 0.4 | 45 | 0.3 |
| 21* | 0.3 | 24* | 0.2 |
| 17 | 0.2 | 10* | 0.0 |
| 12* | 0.2 | 9 | 0.0 |
| 9 | 0.1 | 8 | 0.0 |
| 8* | 0.1 | 7* | 0.0 |
| 8* | 0.1 | 7* | 0.0 |
| 3* | 0.0 | 6 | 0.0 |
| 2* | 0.0 | 4* | 0.0 |
| 2* | 0.0 | 4* | 0.0 |
| 2 | 0.0 | 2* | 0.0 |
| 1* | 0.0 | 2* | 0.0 |
| 1* | 0.0 | 1 | 0.0 |
| 1* | 0.0 | 1* | 0.0 |
| 1* | 0.0 | 1* | 0.0 |
| 1* | 0.0 | 1* | 0.0 |
| 6,854 | 99.9 | 14,210 | 99.7 |

*Industries without Pretreatment for Nickel and Chromium, respectively.

Percent of POTW

| | | |
|---|---|---|
| August | 137 x 31 = 4,247 | lbs/Mo. |
| September | 81 x 30 = 2,430 | lbs/Mo. |
| October | 101 x 31 = 3,131 | lbs/Mo. |
| Total | 6,854 | lbs/Qtr. |

% of POTW = $\frac{6,854}{9,808}$ x 100 = 69.9%

Percent of POTW

| | | |
|---|---|---|
| August | 123 x 31 = 3,813 | lbs/ |
| September | 166 x 30 = 4,980 | lbs/ |
| October | 134 x 31 = 4,154 | lbs/ |
| Total | 14,210 | lbs/ |

% of POTW = $\frac{14,210}{12,947}$ x 100 = 109.8

# TABLE 9-4

## INDUSTRIAL TOXIC POLLUTANT LOADING

## YEAR III, QUARTER 4
(June 7, 1978 - November 29, 1978)

| IRON | | ZINC | |
|---|---|---|---|
| Lbs/Qtr. | Percent | Lbs/Qtr. | Percent |
| 24,952 | 42.9 | 17,772 | 26.6 |
| 11,843* | 20.3 | 13,020* | 19.5 |
| 4,604 | 7.9 | 10,138* | 15.2 |
| 4,229 | 7.3 | 6,454 | 9.6 |
| 2,321 | 4.0 | 6,358* | 9.6 |
| 1,901* | 3.3 | 3,358 | 5.0 |
| 1,828 | 3.1 | 2,166* | 3.2 |
| 1,546* | 2.7 | 2,005 | 3.0 |
| 873* | 1.6 | 1,770 | 2.6 |
| 684 | 1.2 | 1,452 | 2.2 |
| 584* | 1.0 | 742* | 1.1 |
| 523* | 0.9 | 483* | 0.7 |
| 457 | 0.8 | 251 | 0.4 |
| 393* | 0.7 | 250* | 0.4 |
| 274* | 0.5 | 128 | 0.2 |
| 273* | 0.5 | 92 | 0.1 |
| 260* | 0.4 | 88* | 0.1 |
| 209* | 0.4 | 69* | 0.1 |
| 151* | 0.3 | 69* | 0.1 |
| 96 | 0.2 | 43* | 0.0 |
| 69* | 0.1 | 39* | 0.0 |
| 40* | 0.0 | 26* | 0.0 |
| 31* | 0.0 | 22* | 0.0 |
| 27 | 0.0 | 15* | 0.0 |
| 12* | 0.0 | 9 | 0.0 |
| 11* | 0.0 | 9 | 0.0 |
| 8* | 0.0 | 5* | 0.0 |
| 6* | 0.0 | 4* | 0.0 |
| 6 | 0.0 | 3 | 0.0 |
| 5* | 0.0 | 3* | 0.0 |
| 4* | 0.0 | 3* | 0.0 |
| 1* | 0.0 | 1* | 0.0 |
| 58,221 | 100.1 | 66,847 | 119.7 |

* Industries without Pretreatment for Iron and Zinc, respectively.

**Percent of POTW** (Iron)

August 1242 x 31 = 38,502 lbs/Mo.
September 1234 x 30 = 37,020 lbs/Mo.
October 1144 x 31 = 35,464 lbs/Mo.

Total 110,986 olbs/Qtr.

$\% \text{ of POTW} = \frac{58,221}{110,986} \times 100 = 52.5\%$

**Percent of POTW** (Zinc)

August 781 x 31 = 24,211 lbs/Mo.
September 778 x 30 = 23,340 lbs/Mo.
October 745 x 31 = 23,095 lbs/Mo.

Total 70,646 lbs/Qtr.

$\% \text{ of POTW} = \frac{66,847}{70,646} \times 100 = 94.6\%$

## TABLE 9-5

## INDUSTRIAL TOXIC POLLUTANT LOADING

YEAR III, QUARTER 4
(June 7, 1978 - November 29, 1978)

| CYANIDE | | LEAD | |
|---|---|---|---|
| Lbs/Qts. | Percent | Lbs/Qts. | Percent |
| 1,518 | 27.9 | 130* | 14.2 |
| 1,457 | 26.8 | 128 | 14.0 |
| 737* | 13.5 | 92* | 10.0 |
| 358 | 6.6 | 82 | 9.0 |
| 322 | 4.0 | 81 | 8.9 |
| 317 | 6.0 | 80* | 8.8 |
| 245 | 4.5 | 39* | 7.1 |
| 158 | 2.9 | 36* | 3.9 |
| 101 | 1.9 | 33* | 3.7 |
| 39 | 0.7 | 33 | 3.6 |
| 30* | 0.6 | 28* | 3.1 |
| 28* | 0.5 | 26 | 2.8 |
| 24* | 0.5 | 22* | 2.3 |
| 19 | 0.3 | 19* | 2.1 |
| 19* | 0.3 | 18 | 2.0 |
| 18* | 0.3 | 17 | 1.9 |
| 17* | 0.3 | 10 | 1.1 |
| 9 | 0.2 | 10* | 1.1 |
| 6* | 0.1 | 8* | 0.9 |
| 5 | 0.0 | 5* | 0.5 |
| 4 | 0.0 | 5* | 0.5 |
| 3* | 0.0 | 2* | 0.2 |
| 3 | 0.0 | 1* | 0.1 |
| 1* | 0.0 | 1 | 0.1 |
| 1 | 0.0 | 1* | 0.1 |
| 1* | 0.0 | 1* | 0.1 |
| 1 | 0.0 | 1* | 0.1 |
| 1* | 0.0 | 1* | 0.1 |
| 1* | 0.0 | 1 | 0.1 |
| 1* | 0.0 | 1* | 0.1 |
| 1* | 0.0 | 1 | 0.0 |
| 1* | 0.0 | 0* | 0.0 |
| 5,444 | 97.9 | 913 | 102.5 |

* Industries without Pretreatment for Cyanide and Lead, respectively.

**Percent of POTW**

| | | |
|---|---|---|
| August | 94 x 31 = 2,914 | lbs/Mo. |
| September | 87 x 30 = 2,610 | lbs/Mo. |
| October | 92 x 31 = 2,852 | lbs/Mo. |
| Total | 8,376 | lbs/Qtr. |

% of POTW = $\frac{5,444}{8,376}$ x 100 = 65.0%

**Percent of POTW**

| | | |
|---|---|---|
| August | 25 x 31 = 771 | lbs/Mo. |
| September | 32 x 30 = 960 | lbs/Mo. |
| October | 39 x 31 = 1209 | lbs/Mo. |
| Total | 2,944 | lbs/Qtr. |

% of POTW = $\frac{913}{2,944}$ x 100 = 31.0%

Another concern is the hiring and retention of competent technical staff. The District has adopted a policy of making sure salary levels are adequate to keep good people on board.

A problem with major long range implications is the presence of metals in the wastes of septic tank haulers. Follow-up tests have confirmed that metals are present in individual residential septic tanks, although the total pounds/day contributed is small.

The agency landfills its sludge and is concerned about the potential impact of regulations under Section 405 affecting sludge disposal. Additionally, the District believes that the new RCRA requirements released on May 19, 1980, are out of phase with the pretreatment program in regard to controlling heavy metals in the treatment plant sludge. The District may not be able to wait three or four years before the categorical pretreatment standards are promulgated and become effective to require industrial users to control heavy metal discharges to the system.

The District expects to apply for revision of the categorical pretreatment standards for electroplaters to reflect the treatment plant cyanide and heavy metal removal. This application should be completed within a couple of months.

The District expects that it will need to place controls on organics. Grease, oil slugs, and organic solvents of undetermined origin have appeared in its flows from time to time, and phenols have been found in the sludge. Regulations have not been issued on these, and some are on the NRDC list of toxic pollutants.

In anticipation of hazardous waste regulations, the District is taking additional steps to control toxic slugs including establishment of a 24-hour phone line for industry to report on them voluntarily, giving District operations staff time to divert or otherwise adjust for the coming slug.

Even if the District obtains a mass spectrometer, the District is concerned about its ability to adequately monitor for organics. As to the use of regional laboratories, District staff point out that organics decay over time and that a laboratory in one metropolitan area is incapable of adequately serving another area across the State, with only hours available to make meaningful initial extractions and a sample life for organics of 30 to 60 days. The need to maintain both qualified personnel and a continuing high standard of performance is one which the District feels would be poorly met unless organics analysis is under its own direct control.

If it can be shown that organics degrade within the treatment plant system over time, then the District would be willing to grant removal credits to industries since degradability would achieve the basic objective of removing the pollutants from the resulting sludge.

## EXPECTED PRETREATMENT BENEFITS

District staff look to the pretreatment program to provide two significant benefits for their own operations. First, whatever metals removal is achieved will be that much help for the final levels in sludge, although it is now realized that significant amounts of metals are coming from purely domestic sludges.

Second, the District hopes that it will increasingly be able to guard against damaging the plant with slugs which are now difficult to spot and to deal with. Pretreatment will improve the ability to trace back to industry. Up until now, the sampling capability has not been able to warn of slugs or to trace them back to the source.

# C H A P T E R 1 0

## THE EAST BAY M.U.D. EXPERIENCE

### INTRODUCTION

The idea of controlling industrial discharges to a municipally owned sewage treatment plant did not originate with the Federal government. Even before the passing of a national law requiring "pretreatment" programs at the POTWs around the country, a small number of municipal treatment authorities had moved ahead to create their own systems of industrial source control. One of these authorities is the East Bay Municipal Utility District, headquartered in Oakland, California. Hereafter referred to as simply East Bay or the District, it embraces an 83 square mile area and serves approximately 600,000 residents and 20,000 businesses in participating communities.

During the late 1960's, East Bay determined that a more comprehensive wastewater control program was required if POTW discharges to the Bay were to meet Federal and State standards. The District decided to determine the extent to which equitable revenue recovery and source control could be combined to minimize the adverse effects of industrial waste discharged to the sewer system and eventually to the Bay. East Bay's efforts culminated in the adoption of a wastewater control ordinance in December 1972 which created the formal structure of the District's pretreatment program.

East Bay's program has four objectives: (1) to protect treatment facility; (2) to enable the District to comply with effluent and receiving water standards set by the Federal and State authorities; (3) to provide equitable rates and charges to all users of the system; and (4) to provide enough flexibility to accommodate anticipated changes in State and Federal pretreatment laws, regulations, and guidelines. Through the administration of its control program, East Bay can collect the costs of providing waste treatment for those water quality parameters its facilities were designed to achieve. Taken in perspective, instituting an effective pretreatment program was only one of many objectives East Bay has pursued since its formation in November 1944. Although its initial mission was to eliminate the discharge of raw sewage to the San Francisco Bay, the continuing demand for higher and higher standards of effluent quality has transformed that initial objective into a much more complex set of water quality goals. The pretreatment program is the capstone of this effort.

### UNDERSTANDING THE EAST BAY PRETREATMENT PROGRAM

#### Pretreatment Needs in the East Bay Area

East Bay and the seven different cities it serves control some 22 miles of interceptors and nearly 1,400 miles of collecting sewers. Into this network pour the wastes of 20,000 non-residential customers. At present, all flows are conveyed to a central treatment plant in Oakland before final disposal into San Francisco Bay through an outfall in some 40 feet of water near the Oakland Bay Bridge. A fairly conventional pattern of domestic and business growth in the Bay Area during the 1950's and 60's created larger, more complex industrial waste flows through the system. Major industrial spills were common during this 20-year period of expansion; particularly troublesome were pigment discharges from pigment, paint, and ink manufacturers which caused East Bay to violate its receiving waters standards for discoloration. While these and other discharges were initially classified as "accidental," it became obvious to East Bay POTW managers that preventing such upsets would not be possible until a satisfactory program of source control and enforcement was created.

Violating discoloration standards was only one of the many problems faced during the 20-year period. East Bay serves industrial dischargers from all the major manufacturing categories, with high numbers of industries involved in pigment manufacturing, organic chemical refining, petroleum products processing, metal plating, and food processing. Some degree of industrial waste regulation was achieved during this period, even in the absence of adequate legal authority within the East Bay area to require industrial source control. Successes achieved were due primarily to East Bay officials' ability to persuade an offending industry that its discharge was causing a serious problem for the treatment agency.

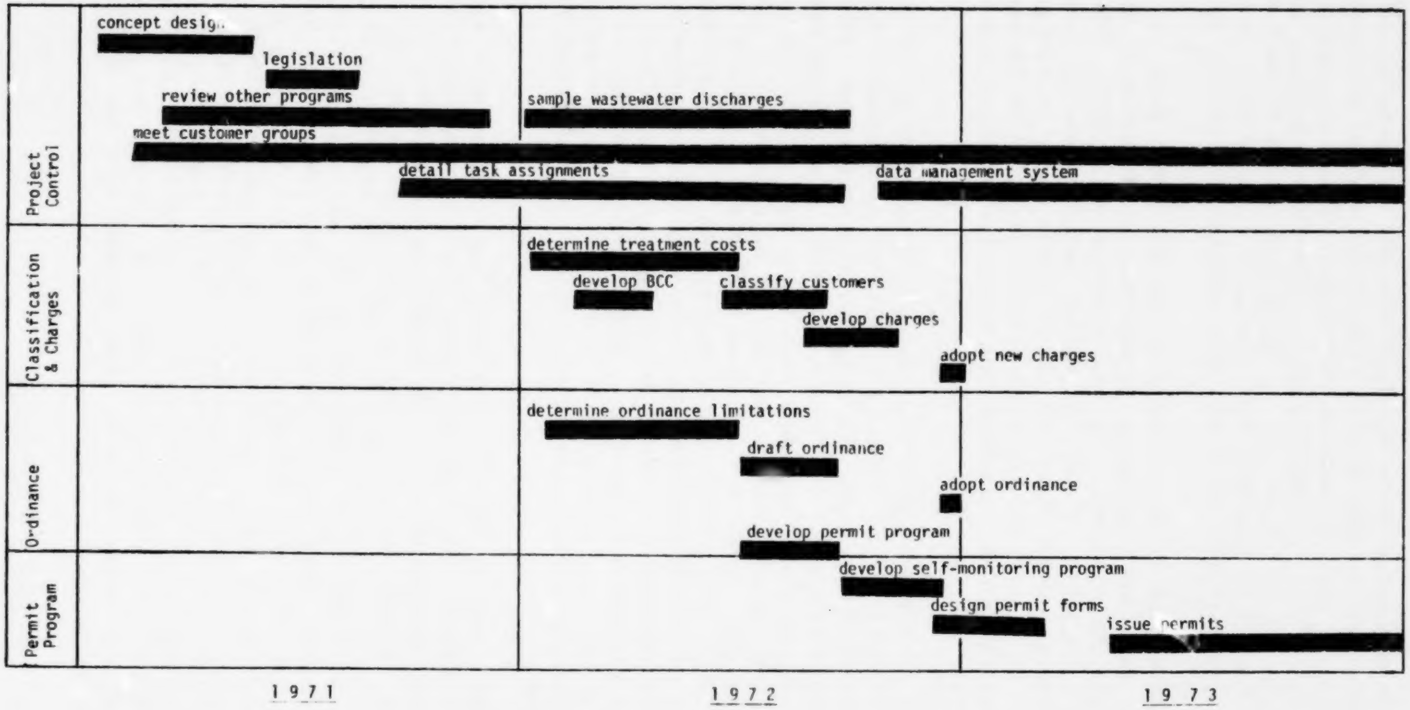
By 1970, the need for a sound program of wastewater management and industrial source control was painfully evident. East Bay was receiving Federal funds for improving its treatment facilities and had moved into the pilot-testing stage of installing secondary treatment capacity. The variable nature of wastewater strength from industrial discharges to the system at that time made it extremely difficult for East Bay engineers to properly test and fine-tune the activated sludge processes crucial to the District's meeting its NPDES permit. Thus, the first reason for instituting an industrial source control program was the creation of stable, biological processes to meet discharge requirements. Additionally, East Bay needed an equitable way of distributing the increased costs for service that would be required with a new plant. Finally, Federal and State regulatory authorities were drafting new tougher receiving water requirements and plant effluent standards that would make it impossible for East Bay to operate successfully without developing a program to identify individual dischargers of regulated substances. Thus, it was that a combination of operating conditions, higher standards, and Federal grants requiring equitable user charges prompted the development of a control program. East Bay's Pretreatment Program Management Plan is shown in Table 10-1.

## Developing a Practical Program for Surveying and Sampling

To develop a good pretreatment program, East Bay officials found they had to devise a way to characterize all of the District's 170,000 accounts on the basis of business activity and waste strength. Before the Federal need for pretreatment programs arose, non-residential users of a POTW in California were classified for revenue reporting purposes into three general categories: commercial, industrial, and public authorities. East Bay needed a more precise system to understand the diversity of its 20,000 non-residential dischargers. Ninety different business categories were developed, based largely on the Federal Standard Industrial Classification (SIC). East Bay refers to its own code as the "Business Classification

TABLE 10-1

EAST BAY'S PRETREATMENT PROGRAM MANAGEMENT PLAN



Code" (BCC) to emphasize that, although the SIC is generic to the BCC, BCC is not identical to the Federal code. The obvious advantage to the East Bay system is that it reduces the number of SIC classes to a workable total, while still reflecting major differences between industrial types. POTW operators should note a major difference between the two codes is the fact that the East Bay system is related more closely to water quality criteria while the SIC reflects industrial association.

At the same time it was developing the BCC code, East Bay began a comprehensive sampling program to gather wastewater strength information for each of the BCC classes. The two programs--classification and sampling--were developed together, since information gathered during sampling about specific industries often modified the criteria for a particular category in the code. To illustrate the need for modification while developing accurate classifications, consider the case of characterizing baking establishments within the East Bay service area.

East Bay surveyors found that commercial operations described generally as "bakeries" could not be lumped together for pretreatment purposes. Through its sampling program, the District's pretreatment task force found that cooking utensils were air-cleaned whenever bread alone was being baked. If pies, cookies, or cakes were being made, then the bakery used a dishwasher and the characteristics of its discharges to a sewer were obviously stronger. Given this obvious difference, two separate categories for bakeries were established in the BCC system. This case also points up the fact that a comprehensive, well-run sampling and surveying program can make it easy to discern when a non-residential user should really be included in a pretreatment program. When differences such as those in the baking industry are uncovered before a classification program is completed, the administrative difficulties of separating one discharger from another are eliminated.

Both the classification and the sampling programs were major additions to East Bay's overall activities. Going from the previous, three-class system for non-residential users to an 87-class system was no small job. Likewise, the sampling program undertaken to assess waste characteristics was a cut above previous survey work. Until it began pretreatment work development, only six major industries in the East Bay service area had ever been sampled. This small number of actual samples has been attributed primarily to the fact that the responsibility for surveying and sampling had been vested in the District's municipal customers, rather than in the POTW itself. In comparison, more than 300 customers within the District were visited during a six month period in 1972, approximately 7,000 tests on samples of industrial wastewater were performed during the same time. East Bay investigators sampled throughout the day so that variations in wastewater strength might be taken into account when the final characterizations were assembled.

## The Benefits of an Effective Program

The extensive survey work carried out by East Bay investigators allowed the District to conclusively prove that the differences between categories of industrial dischargers were more significant than the differences within each category. Given the finding that there was relatively little difference between large and small users within a given class for various pollutants, as compared to the strength differences between various classes, East Bay was able to adopt effluent limits for its industrial dischargers that eliminated the spector of discrimination that could arise if limits are based on a discharger's size. Other advantages to the East Bay sampling program are discussed in the section below on developing pretreatment rate structures.

Although much of the sampling work carried out for this pretreatment program was conducted by the POTW staff, East Bay also developed a questionnaire that large customers could use in characterizing their own wastes. Such a questionnaire program could be a useful addition to any local pretreatment effort in two ways. First, the questionnaire has enormous educational value for the industrial customer. In areas where no previous source control or enforcement program was in effect, industries subject to pretreatment generally know very little about their wastewater. Going through the process of answering such a questionnaire enables dischargers to discover the exact nature of their effluents as well as to directly experience the types of problems and difficulties that are encountered by a POTW when it obtains a representative sample of industrial wastewater. Industrial customers agreeing to complete a questionnaire are generally easier to talk to about the need for controls since they can better understand the potential impact of an uncontrolled discharge on both a POTW and its receiving waters.

A second benefit of carrying through the questionnaire program relates to fair allocation of the overall costs of sampling. East Bay pretreatment program directors felt that part of the total cost of a sampling program should be borne by the customers regulated. They reasoned that it was fair for larger customers to determine the most satisfactory and economical methods of sampling and testing their own wastes. Such an approach is completely within the general philosophy of pollution control legislation that users pay the costs of their pollution-causing activities. How did industrial customers respond? The questionnaire was sent to approximately 150 of the largest East Bay users; although answering the questionnaire was not legally required, approximately 90 industries returned completed forms to the District.

## Setting Equitable Pretreatment Charges

Since the development of a pretreatment program coincided with East Bay's move to secondary treatment, an analysis of the District's capital and operating expenses to determine the costs of treatment for different parameters for wastewater strength was undertaken at the same time. The general revenue system used by the District draws from tax collection and service charges. Pretreatment bills are calculated on the basis of a unit rate calculated for each parameter, multiplied by the number of units discharged, as indicated in an industrial user's pretreatment program permit.

A short description of the rationale behind East Bay's general revenue program is in order here. The service charges provide the District with the money needed to offset the capital costs of existing facilities and the ongoing operation and maintenance costs that can be directly attributed to users to the sewer system. Approximately 50% of the total capital expenses and 96% of the O&M costs are paid for through the service charge collected. Ad valorem taxes are used to pay for those capital costs that can be attributed to future growth within the system and to infiltration and inflow from unidentifiable sources. Such tax revenues offset 47% of the total capital requirements and 4% of the operational expenses, the 4% representing the portion of plant operations attributed to infiltration and inflow. In developing this system, East Bay reasoned that using the ad valorem tax base was the proper way to charge for services that benefit property and that treatment for infiltration and inflow and additional capacity for future use were the two aspects of a POTW's operations that benefited the community generally.

Pretreatment charges were based on the results of East Bay's sampling program. The sampling showed that customers could be assigned a waste strength based on their business category. Once the survey was completed, the 20,000 non-residential customers of the District were divided into the 87 classification groups created. Data from the survey was then used to assign a strength to each pollutant in each business class. For an individual discharger, meter readings and sampling data were used to calculate the total amount of pollutants and the volume of discharge. Unit rates were calculated for each parameter based on East Bay's knowledge of the amount of each parameter accounted for in the overall system and the cost to the District of handling each parameter. Using the BCC system, East Bay pretreatment officials calculated the separate contributions of each user in each category and then determined the limits to place on such users directly from the POTW's discharge requirements or effluent limitations.

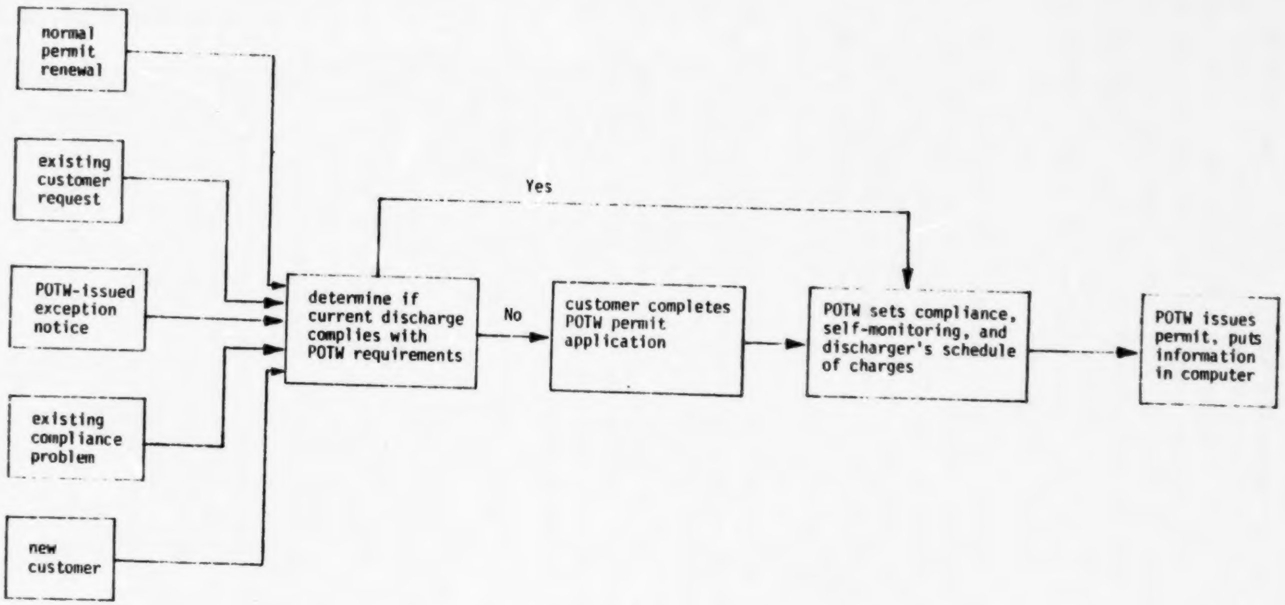
Once unit rates were calculated for each parameter within each BCC class, a list of charges was adopted for each individual class. Such charges were rounded to the nearest five cents. Designers of the pretreatment system decided that the five cent increment represented the degree of accuracy that they could achieve with charges based on volume and quality, given the spread of each user's wastewater strength within a business classification group. East Bay officials tested the accuracy of this general procedure by comparing the mass emission for each parameter computed for all categories with the respective amounts of pollutant entering the treatment plant. Data collected during this verification process proved the validity of assigning the strength to each individual class of user. Further, the sampling procedure used by the District in its general survey showed that wastewater strength was independent of wastewater volume, as mentioned previously.

### Issuing Effective Permits and Credits

The strength of East Bay's pretreatment program rests on its permit system. That system, illustrated in Table 10-2, involves issuing specific sets of effluent limitations to industrial dischargers within each of the BCC classes established, based on the POTW's own limitations as set forth in East Bay's NPDES permit. Certain permits are issued automatically to "critical industries" specified in the District's wastewater control ordinance. A critical industry classification includes all manufacturing and processing industries and industries discharging other than sanitary wastewater.

## TABLE 10-2

## PROCESS OUTLINE FOR AN INDUSTRIAL DISCHARGE PERMIT


normal permit renewal
existing customer request
POTW-issued exception notice
existing compliance problem
new customer
determine if current discharge complies with POTW requirements
Yes
No
customer completes POTW permit application
POTW sets compliance, self-monitoring, and discharger's schedule of charges
POTW issues permit, puts information in computer

In addition to a set of mandatory permits, East Bay also issues two types of optional permits. The first type is available for customers classified into BCC for which the assigned waste strength is stronger than that which the customer is actually discharging. The second type of optional permit is available if a customer discharges a volume of wastewater less than the metered water supply from the District; when such permits are requested, an engineering estimate is the only accurate way of determining the wastewater volume in question. Creating optional permits is one way East Bay has found to make the pretreatment program generally more palatable to its industrial customers since it provides some of them with a strong incentive to come into the program and sample their own wastes as a way to reduce overall costs.

All permits, whether mandatory or optional, are issued in the same fashion. Industrial dischargers in the East Bay area are brought into the program in any one of three ways. They may be new customers applying for sewage connections; they may receive an acception notice derived from the billing record kept at East Bay's headquarters and based on the criteria of flow and BCC designation; or they may request an optional permit from the District's pretreatment program administrators.

Permit applications are completed by each customer. If a permit covers wastewater volume estimation, the engineering calculations needed to establish such a figure must be submitted by the discharger for review at the District. Permits covering wastewater strength require the adoption of a self-monitoring program at the customer's facility. Permits are renewed annually; compliance with the District's ordinance and any additional permit requirement is verified through the self-monitoring sampling. Enforcement and compliance are discussed in the next section.

Although the East Bay pretreatment program was set up before final regulations for such operations were issued from the U.S. EPA, the concept of credit for POTW removal can be incorporated into the program design. Here again, the extensive survey program and the locally developed BCC classification scheme make the job of assigning pretreatment credits fairly routine although the District has not made a decision to date on whether to apply for them. Each BCC group's contribution of a given pollutant was considered in a way that led to the development of limits that represent a least-cost solution for the general community. By having a locally-developed, practical "map" of the District's users and their individual contributions, it was possible to equitably relate each class' contribution of a particular pollutant to the overall load of that pollutant through the system. Since all substances covered by the national pretreatment program appear in a POTW's own NPDES permit, a basic level of discharge was established for each regulated substance. If a certain percentage reduction was required in the municipal agency's own discharge and the contribution of each BCC category was determined, the limit for a given industrial discharger to the system could be set several times higher than if user make up and contribution could not be considered. This method of setting credits does not have to be exclusively exercised for large mass emission dischargers. Because it results in the setting of realistic industrial source effluent limits, pretreatment regulations developed in this fashion can be enforced with the minimum number of industries affected.

## Monitoring and Enforcing for Compliance

Potential problems for industrial discharges are identified through East Bay's continuing surveillance program. Information in the District's data bank and program control operations is used to identify and printout exception and summary reports on users of the system. Violations can be spotted either through review of the self-monitoring reports produced or through direct District sampling of individual waste flows. Once a problem is identified, the discharger's flow is further sampled and the discharger notified of the results of such sampling. He is then given the opportunity to correct the problem immediately or to report on the nature and schedule of corrective actions required to bring this flow up to permit limits. If the problem is corrected at this point, East Bay pretreatment officials return to their normal monitoring schedule.

If the problem is not corrected, the District will initiate more detailed permit processing to obtain additional information and to decide whether or not reasonable corrective actions are being proposed. In cases where the corrective actions proposed are not effective, East Bay's officials may initiate one of several different enforcement actions. The range of enforcement measures covers administrative, criminal, or civil penalties as provided for in the District's general pretreatment ordinance. Corrective actions that the District's officials find will resolve the problem are assembled into a detailed schedule of reasonable steps the discharger must take to come back into compliance. That schedule is then incorporated into the discharger's permit, and his activities are monitored for progress towards compliance.

Should a discharger fail to comply with the schedule in the permit, additional action must be taken. First, a cease and desist order may be initiated as an administrative sanction. Such orders usually require that: (1) the discharger comply immediately; (2) the discharger take preventive measures immediately; or (3) the discharger comply in the manner set down in the schedule issued to him. A civil action (including fines of up to $6,000 per day) may be leveled against any discharger who fails to comply with the cease and desist order. Alternatively, injunctive relief or termination of water and sewage disposal services may be resorted to as final enforcement actions.

East Bay's enforcement system emphasizes positive efforts to assist an industrial customer who has been unable to meet his effluent limitations, while at the same time making it clear to the violator that adequate legal and administrative powers exist to bring him into compliance as quickly as his case warrants. To date, this program of monitoring and enforcing permits has worked very well. Effluent limits have been issued to 60 individual dischargers covering approximately 80% of the total industrial flow through the East Bay system. Recently, a review of the general level of compliance revealed that approximately 12 dischargers were under compliance time schedules; four of these were also operating under cease and desist orders. Although East Bay has had to prepare some cases for legal resolution, it has not had to go to court to force the discharger into compliance nor has it had to disconnect municipal services in any case. East Bay's pretreatment staff collects approximately 2,000 samples each year in its efforts to verify compliance and receives approximately 150 self-monitoring reports from dischargers notified of violations which describe the nature and schedule to be taken to correct such problems.

While the District's program controls large industrial users of the system very effectively, East Bay officials are concerned about the possibility of more stringent Federal requirements and the need to expand the program to control smaller industries which may not be able to provide the level of pretreatment that larger concerns are capable of providing. In terms of manpower, this effort could result in the addition of 20 or 30 people to the current ten-person staff. Further, without taking into account laboratory needs, which are currently being considered, as well as legal and other personnel support, the District sees the possibility of having to add a million dollars a year to the budget. This would represent a budget increase of over 400%.

### Securing Formal Approval

The preceding sections of this chapter illustrate considerable initiative and inventiveness on East Bay's part, given the need to develop a pretreatment program. Throughout the process, however, officials at the District kept one eye cocked towards actions at the State and Federal levels. As will be the case in every other instance, local flexibility was in Oakland tempered by the knowledge that additional constraints and conditions were being prepared and that the final program had to pass muster higher up.

A look at the planning schedule laid out by the District's people (Table 10-1) shows many of the tasks necessary to complete the general program were started before an ordinance was actually adopted. For example, the BCC system and the industrial effluent limits for regulated substances had to be included in the ordinance so it could not be drafted until these items were completed. While the final ordinance contains some very specific prohibitions and requirements, District officials left it loose enough to include whatever new limits were imposed by State and Federal authorities. The regulations developed by California and the U.S EPA in 1972 and 1973 were coming thick and fast, but there was no clear indication what their useful lives would be.

When plotting the strategy behind producing and securing the final ordinance, East Bay managers decided to write a document whose basic elements would not need to be revised once Sacramento and Washington had spoken. Consequently, the permit program was also completed before the document was prepared. An important element in their strategy was the relationship between the overall ordinance and the permit program. Technically, the permits are not absolutely necessary to the execution of the ordinance. The regulations and discharge standards apply equally to all of the District's 167,000 accounts. East Bay program controllers can regulate discharges and recover treatment costs on the basis of the rate structure and the BCC system alone. Such a design allowed East Bay to adopt its general program and move on to meet the conditions of its own NPDES permit had difficulties with the pretreatment permits arisen.

Using this strategy of developing both the program and the ordinance while insulating the ordinance's legal integrity from the specific permit mechanism, it was possible for East Bay to adopt its industrial waste control ordinance in December 1972...a scant two months after the first Clean Water Act was passed by Congress. It is a solid tribute to the District's foresight that it has been able to operate under that ordinance for the past nine years without a major change in its enabling passages. The District's ordinance is included in the Resource Reader as Appendix B.

As Table 10-3 indicates, the results of East Bay's source control program accomplished long before the promulgation of Federal pretreatment regulatory requirements, has been most impressive. To achieve program approval under these regulations--recently required by the California Regional Water Quality Control Board by January 1, 1981--the District will have to fine-tune some aspects of its previous efforts such as developing more precise data from electroplaters within the system and stimulating its existing comprehensive permit application. Additionally, while East Bay does not envision the need for grant funding because of its basically sound pretreatment structure, expansion of compliance monitoring and enforcement activities may require a stronger laboratory capability.

## APPLYING THE EAST BAY EXPERIENCE

### Pretreatment Planning Tips

Even without the need to bring a secondary treatment plant on line while developing a pretreatment program, putting a successful industrial source control program into effect takes considerable planning. In Oakland, District personnel devoted a full year to developing in detail the concept of local pretreatment and to reviewing the programs used elsewhere. Another year was spent deciding what the specific task assignments would be for each person or group involved.

While the exact sequence of activities East Bay followed may not be transferred directly to other treatment agenices, POTW operators should consider the following points:

- The final program adopted must be flexible enough to allow for changes in the nature of wastewater management. It is likely that some of these changes will take place in the next three years, before many local programs are completed. This means that the program planning process must also be able to "shift gears" at some point.
- Plan for the unexpected, especially if the idea of pretreatment is a new one in the community. Do not time activities so tightly that unforeseen delays stop events from moving forward.
- Decide what the relationships will be between the tasks of sampling, surveying, code-making, and permit development. The East Bay tactics of insulating permits from overall legal authority may be worth adopting locally. Only a clear idea of how these four depend on each other will make it possible to arrange their execution properly.

## TABLE 10-3

## A COMPARISON OF EFFLUENT QUALITY BEFORE AND AFTER SOURCE CONTROL

| REGULATED SUBSTANCE | PAST AVERAGE VALUES (kg/day) | RECENT AVERAGE VALUES (kg/day) | APPROXIMATE PERCENT REDUCTION |
|---|---|---|---|
| Arsenic[1] | 3.0 | 1.0 | 67 |
| Cadmium[1] | 4.0 | 2.0 | 50 |
| Total Chromium[2] | 175.0 | 22.0 | 87 |
| Copper[2] | 129.0 | 44.0 | 66 |
| Lead[2] | 60.0 | 17.0 | 71 |
| Mercury[2] | 4.0 | 0.1 | 97[3] |
| Nickel[2] | 37.0 | 30.0 | 18 |
| Silver[1] | 2.0 | 2.0 | 0 |
| Zinc[2] | 385.0 | 175.0 | 55 |

Note: 1 - Past average values shown are for the period July 1975 through June 1976.

2 - Past average values shown are for the period July 1972 through June 1974.

3 - Due to the concurrent efforts of U.S. EPA to control the use of mercury, the reduction in Hg in plant flow cannot be completely explained by the East Bay pretreatment program.

## Survey and Sampling Shortcuts

"Shortcut" as used here means a reduction in the time and effort needed to produce the final pretreatment program through specific actions in the survey and sampling phases. Accurate maps and profiles of the industrial dischargers regulated under pretreatment are absolutely necessary--both to the treatment agency as the regulator and to the customer as the regulated party--each has rights, responsibilities, and expectations that depend on reliable information.

- Use all available information to make an initial assessment of the industrial customer sector before starting the actual survey work.
- Consider modifying the Federal SIC classes to reflect local conditions. Remember: the SIC categories were primarily designed to reflect similar industries, not similar wastewater characteristics. Are all those little categories necessary?
- Wherever possible, use mass emission measurements as the controlling factor; avoid concentrations. Emission standards are easier to balance, insensitive to water conservation, and preferable to EPA.

## Program Management Pointers

Improperly executed, a pretreatment program can throw a monkey wrench into normal POTW management operations. Since the activities of the program's personnel touch on more than the technical aspect of wastewater control, new patterns of communications must be set up within the treatment agency to make pretreatment succeed. After pulling District legal, financial, data processing, and customer service staff members into the development program, it was still necessary to assemble a team of engineers and inspectors to implement the ordinance.

- Consider how pretreatment requires POTW personnel to change their relationship to industrial customers. A regulator does something different than a provider of a public service.
- Accept the fact that there will be a continual turnover of people and a certain amount of re-education going on constantly. The "learning curve" may drop somewhat after the formal program starts running, but it will never taper off completely.
- Hire a competent, imaginative, computer scientist to assist in the development of the pretreatment information system. East Bay found that no prepared software "package" suited the District's purposes. Programmers worked directly with an outside specialist to write the equations, routines, and instructions they wanted in order to create a versatile, labor-saving system.
- Take good care of mid-level pretreatment managers. As a group, they will be much in demand for the next five years at least. Replacing them will be hard, particularly if they have worked on a program since its beginning and understand it thoroughly.

- Have patience. It will probably take more time than originally thought to get everything up to the proper running speed. Persevere.

## Public Relations & Enforcement Ideas

The idea of pretreatment sounds attractive to the layman with no stake in the business world; it sounds like a waste of precious capital to the business people being brought under control. Both positions could be right but for all the wrong reasons. East Bay officials found it paid to start meeting with other citizen groups, industrial representatives, and individual industrial customers almost a year before the District began a concerted sampling and surveying program. While it may be difficult to convince a skeptical business person that pretreatment will somehow benefit them, they will appreciate early notice of the "bad news" and continued contact throughout the program's development.

- Get everyone into the act as soon as possible. Pretreatment will not go away.

- Remember that industrial customers require time to decide how to respond to the need for improved treatment. Often the crucial decisions are made in corporate headquarters somewhere else.

- Use the program management plan you have developed to inform industrial customers of the steps being taken to set up a pretreatment system. Tell them where they fit in and why. If it is clear to them that the treatment agency knows what it is doing, they will be more likely to respond in a professional rather than emotional way.

- Make it especially clear to dischargers that a definite enforcement policy is being created that is flexible enough to deal with individual cases as they come up. Let them know what the consequences of their actions can be.

- Try to provide discharges with as much information as they need to make informed decisions. A "sunshine system" of reports and notices can do this.

Appendix A

# CITY OF CHATTANOOGA
DEPARTMENT OF PUBLIC WORKS
CHATTANOOGA, TENNESSEE 37402

## CITY OF CHATTANOOGA

## ORDINANCE No. 7129

AN ORDINANCE TO AMEND CHATTANOOGA CITY CODE, ORDINANCE No. 7129, ADOPTED JANUARY, 1977 AND AMENDED HERETO DECEMBER, 1978.

*Dedicated to the Service of Making Chattanooga*
*a Better Place in which to Live and Work.*

**1978**

CHARLES. A. "PAT" ROSE
*Mayor*

PAUL F. CLARK
*Commissioner*

GENE ROBERTS
*Commissioner*

JAMES C. EBERLE
*Commissioner*

JOHN P. FRANKLIN
*Commissioner*

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ELLIS L. SPENCER
*City Engineer*

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# CITY OF CHATTANOOGA

## ORDINANCE NO. 7129

AN ORDINANCE TO AMEND CHATTANOOGA CITY CODE, ORDINANCE No. 7129, ADOPTED JANUARY, 1977 AND AMENDED HERETO DECEMBER, 1978.

Section 1. BE IT ORDAINED BY THE BOARD OF COMMISSIONERS OF THE CITY OF CHATTANOOGA, That Chapter 32, Article III, Chattanooga City Code, Part II, be and the same is hereby amended by striking Sections 32-45 through 32-53 in their entireties and substituting in lieu thereof new Sections 32-45 through 32-53 and adding new Sections 32-54 and 32-55 in the following words and figures:

## SECTION 32-45.
## GENERAL PROVISIONS

**(a) Purpose and Policy:**

The purpose of this article is to set uniform requirements for users of the City of Chattanooga's wastewater collection system and treatment works to enable the City to comply with the provisions of the Clean Water Act and other applicable federal and state law and regulations, and to provide for the public health and welfare by regulating the quality of wastewater discharged into the City's wastewater collection system and treatment works. This article provides a means for determining wasterwater volumes, constituents and characteristics, the setting of charges and fees, and the issuance of permits to certain users. This article establishes effluent limitations and other discharge criteria and provides that certain users shall pretreat waste to prevent the introduction of pollutants into the publicly owned treatment works (hereinafter referred to as POTW) which will interfere with the operation of the POTW or contaminate the sewage sludge; and to prevent the introduction of pollutants into the POTW which will pass through the treatment works into the receiving waters or the atmosphere, or otherwise be incompatible with the treatment works; and to improve opportunities to recycle and reclaim wastewaters and the sludges resulting from wastewater treatment. This article provides measures for the enforcement of its provisions and abatement of violations thereof. This ordinance establishes a "Wastewater Regulations Board" and establishes its duties and establishes the duties of the Superintendent to insure that the provisions of this Ordinance are administered fairly and equitably to all users.

**(b) Definitions:**

For purposes of this article the following phrases and words shall have the meaning assigned below, except in those instances where the content clearly indicates a different meaning:

(1) **Act or "the Act"** means the Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251, et seq.

(2) **Approval Authority,** means the Director in an NPDES state with an approved state pretreatment program and the Administrator of the EPA in a non-NPDES state or NPDES state without an approved state pretreatment program.

(3) **Authorized Representative of Industrial User.** An authorized representative of an industrial user may be: (1) A Principal executive officer of at least the level of vice president, if the industrial user is a corporation; (2) A general partner or proprietor if the industrial user is a partnership or proprietorship, respectively; (3) A duly authorized representative of the individual designated above if such representative is responsible for the overall operation of the facility from which the indirect discharge originates.

(4) **Building sewer.** A sewer conveying wastewater from the premises of a user to a community sewer.

(5) **Board.** Wastewater Regulations Board.

(6) **Categorical Standards.** National Pretreatment Standards.

(7) **City.** The City of Chattanooga, Tennessee, a municipal corporation.

(8) **Community sewer.** Any sewer containing wastewater from more than one premise.

(9) **Compatible pollutant.** Biochemical oxygen demand, suspended solids, pH and fecal coliform bacteria; plus any additional pollutants identified in the publicly-owned treatment work's NPDES permit, for which the publicly-owned treatment works is designed to treat such pollutants and in fact does remove such pollutants to a substantial degree.

(10) **Control Authority.** The term "control authority" shall refer to the "Approval Authority," defined hereinabove; or the Superintendent if the City has an approved Pretreatment Program under the provisions of 40 C.F.R. 403.11.

(11) **Direct Discharge.** The discharge of treated or untreated wastewater directly to the waters of the State of Tennessee.

(12) **Environmental Protection Agency, or "EPA"** means the Environmental Protection Agency, an agency of the United States, or where appropriate the term may also be used as a designation for the Administrator or other duly authorized official of said agency.

(13) **Grab Sample.** A sample which is taken from a waste stream on a one-time basis with no regard to the flow in the waste stream and without consideration of time.

(14) **Holding tank waste.** Any waste from holding tanks such as vessels, chemical toilets, campers, trailers, septic tanks, and vacuum-pump tank trucks.

(15) **Incompatible pollutant.** All pollutants other than compatible pollutants as defined in subparagraph 9 of this section.

(16) **Indirect Discharge** means the discharge or the introduction of non-domestic pollutants from any source regulated under section 307(b) or (c) of the Act, (33 U.S.C. 1317), into the POTW (including holding tank waste discharged into the system) for treatment before direct discharge to the waters of the state.

(17) **Industrial User** means a source of indirect discharge which does not constitute a "discharge of pollutants" under regulations issued pursuant to section 402, of the Act.

(18) **Interference** means inhibition or disruption of the sewer system, treatment processes or operations or which contributes to a violation of any requirement of the City's NPDES Permit. The term includes prevention of sewage sludge use or disposal by the POTW, in accordance with section 405 of the Act, (33 U.S.C. 1345) or any criteria, guidelines or regulations developed pursuant to the Solid Waste Disposal Act (SWDA), the Clean Air Act, the Toxic Substances Control Act, or more stringent state criteria (including those contained in any State sludge management plan prepared pursuant to Title IV of SWDA) applicable to the method of disposal or use employed by the POTW.

(19) **Mass emission rate.** The weight of material discharged to the community sewer system during a given time interval. Unless otherwise specified, the mass emission rate shall mean pounds per day of the particular constituent or combination of constituents.

(20) **Maximum concentration.** The maximum amount of a specified pollutant in a volume of water or waste water.

(21) **National Pretreatment Standard or Pretreatment Standard,** means any regulation containing pollutant discharge limits promulgated by the EPA in accordance with section 307 (b) and (c) of the Act (33 U.S.C. 1347) which applies to Industrial Users.

(22) **New Source.** Any source, the construction of which is commenced after the publication of proposed regulations prescribing a section 307 (c) (33 U.S.C. 1317) categorical pretreatment standard which will be applicable to such source, if such standard is thereafter promulgated within 120 days of proposal in the Federal Register. Where the standard is promulgated later than 120 days after proposal, a new source means any source, the construction of which is commenced after the date of promulgation of the standard.

(23) **National Pollution Discharge Elimination System or NPDES permit.** A permit issued to a POTW pursuant to section 402 of the Act (33 U.S.C. 1342).

(24) **Person.** Any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, estate, governmental entity or any other legal entity, or their legal representatives, agents or assigns. The masculine gender shall include the feminine, the singular shall include the plural where indicated by the context.

(25) **Pollution.** The man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water.

(26) **Premises.** A parcel of real estate or portion thereof including any improvements thereon which is determined by the Superintendent to be a single user for purposes of receiving, using, and paying for services.

(27) **Pretreatment.** The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater to a less harmful state prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW. The reduction or alteration can be obtained by physical, chemical or biological processes, process changes or by other means, except as prohibited by 40 C.F.R. section §403.6(d).

(28) **Pretreatment Requirements.** Any substantive or procedural requirement related to pretreatment, other than a National Pretreatment Standard imposed on an industrial user.

(29) **Publicly owned treatment works or POTW.** A treatment works as defined by section 212 of the Act, (33 U.S.C. 1292) which is owned in this instance by the City. This definition includes any sewers that convey wastewater to such a treatment works, but does not include pipes, sewers or other conveyances not connected to a facility providing treatment. The term also means the City of Chattanooga, a municipality, as defined in section 502 (4) of the Act, (33 U.S.C. 1362) which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

(30) **Reclaimed water.** Water which, as a result of treatment of waste, is suitable for direct beneficial uses or a controlled use that would not occur otherwise.

(31) **Standard Industrial Classification.** A classification pursuant to the Standard Industrial Classification Manual issued by the Executive Office of the President, Office of Management and Budget, 1972.

(32) **Superintendent.** The person designated by the City to supervise the operation of the publicly owned treatment works and who is charged with certain duties and responsibilities by this article, or his duly authorized representative.

(33) **Toxic pollutant.** Any pollutant or combination of pollutants listed as toxic in regulations promulgated by the Administrator of the Environmental Protection Agency under the provisions of 33 U.S.C. 1317.

(34) **Treatment works.** Any devices and systems used in the storage, treatment, recycling and reclamation of domestic sewage or industrial wastes of a liquid nature including interceptor sewers, outfall sewers, sewage collection systems, pumping, power, and other equipment and appurtenances; extensions, improvements, remodeling, additions and alterations thereof; elements essential to provide a reliable recycled supply such as standby treatment units and clear well facilities; and any works, including land that will be an integral part of the treatment process or is used for ultimate disposal of residues resulting from such treatment; and including combined storm water and sanitary sewer systems.

(35) **Twenty-four hour, flow proportional composite sample.** A sample consisting of several effluent portions collected during a twenty-four (24) hour period in which the portions of sample are proportionate to the flow and combined to form a representative sample.

(36) **Unpolluted water.** Water to which no constituent has been added, either intentionally or accidentally, which would render such water unacceptable to the State of Tennessee or the Environmental Protection Agency having jurisdiction thereof for disposal to storm or natural drainage, or directly to surface waters.

(37) **User.** Any person, firm, corporation or governmental entity that discharges, causes or permits the discharge of wastewater into a community sewer.

(38) **Waste.** Includes sewage and any and all other waste substances, liquid, solid, gaseous or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing or processing operation of whatever nature, including such waste placed within containers of whatever nature prior to, and for purposes of, disposal.

(39) **Wastewater.** Waste and water, whether treated or untreated, discharged into or permitted to enter a community sewer.

(40) **Wastewater constituents and characteristics.** The individual chemical, physical, bacteriological and radiological parameters, including volume and flow rate and such other parameters that serve to define, classify or measure the contents, quality, quantity and strength of wastewater.

(41) **Waters of the State of Tennessee.** Any water, surface or underground, within the boundaries of the state.

(c) The following abbreviations shall have the following meanings:

(1) **BOD**—Biochemical oxygen demand.

(2) **CFR**—Code of Federal Regulations.

(3) **COD**—Chemical oxygen demand.

(4) **EPA**—Environmental Protection Agency.

(5) **GMP**—Good Management Practices.

(6) **l**—Liter.

(7) **MBAS**—Methylene-blue-active substances.

(8) **mg**—Milligrams.

(9) **mg/l**—Milligrams per liter.

(10) **NPDES**—National Pollutant Discharge Elimination System.

(11) **POTW**—Publicly owned treatment works.

(12) **SIC**—Standard Industrial Classification.

(13) SWDA—Solid Waste Disposal Act, 42 U.S.C. 6901, et seq.

(14) USC—United States Code.

## SECTION 32-46.
## PROHIBITIONS AND LIMITATIONS ON DISCHARGE INTO THE PUBLICALLY OWNED TREATMENT WORKS.

**(a) Purpose and Policy.**

This section establishes limitations and prohibitions on the quantity and quality of wastewater which may be lawfully discharged into the publically owned treatment works. Pretreatment of some wastewater discharge will be required to achieve the goals established by this article and the Clean Water Act. The specific limitations set forth in Paragraph I hereof, and other prohibitions and limitations of this article, are subject to change as necessary to enable the City to provide efficient wastewater treatment, to protect the public health and the environment, and to enable the City to meet requirements contained in its NPDES permit. The Wastewater Regulations Board shall review said limitations from time to time to insure that they are sufficient to protect the operation of the treatment works, that they are sufficient to enable the treatment works to comply with NPDES permit, and that they are sufficient to provide for a cost effective means of operating the treatment works, and that they are sufficient to protect the public health and the environment. The Board shall recommend changes or modifications as necessary.

**(b) Prohibited Pollutants.**

No person shall introduce into the publically owned treatment works any of the following pollutants which acting either alone or in conjunction with other substances present in the POTW interfere with the operation of the POTW as follows:

(1) Pollutants which create a fire or explosion hazard in the POTW;

(2) Pollutants which cause corrosive structural damage to the POTW, but in no case discharges with a pH lower than 5.0 or higher than 10.5;

(3) Solid or viscous pollutants in amounts which cause obstruction to the flow of the sewers, or other interference with the operation of or which cause injury to the POTW, including waxy or other materials which tend to coat and clog a sewer line or other appurtenances thereto;

(4) Any pollutant, including oxygen demanding pollutants (BOD, etc.), released in a discharge of such volume or strength as to cause interference in the POTW;

(5) Heat in amounts which will inhibit biological activity in the POTW resulting in interference, but in no case heat in such quantities that the temperature at the treatment works influent exceeds 40° Centigrade (104° Fahrenheit). Unless a higher temperature is allowed in the user's wastewater discharge permit, no user shall discharge into any sewer line or other appurtenance of the POTW wastewater with a temperature exceeding 65.5° Centigrade (150° Fahrenheit).

**(c) Wastewater Constituent Evaluation.**

The wastewater of every Industrial User shall be evaluated upon the following criteria:

(1) Wastewater containing any element or compound which is not adequately removed by the treatment works which is known to be an environmental hazard;

(2) Wastewater causing a discoloration or any other condition in the quality of the City's treatment works' effluent such that receiving water quality requirements established by law cannot be met;

(3) Wastewater causing conditions at or near the City's treatment works which violate any statute, any rule, or regulation, of any public agency of this State or the United States;

(4) Wastewater containing any element or compound known to act as a lacrimator, known to cause nausea, or known to cause odors constituting a public nuisance.

(5) Wastewater causing interference with the effluent or any other product of the treatment process, residues, sludges, or scums causing them to be unsuitable for reclamation and reuse or causing interference with the reclamation process;

(6) Wastewater having constituents and concentrations in excess of those listed in Section 32-46 (1), or cause a violation of the limits in 32-46 (m).

The Superintendent or the Wastewater Regulations Board, as applicable, shall establish reasonable limitations or prohibitions in the wastewater discharge permit of any user that discharges wastewater violating any of the above criteria as shall be reasonably necessary to achieve the purpose and policy of this article.

**(d) National Pretreatment Standards:**

Certain Industrial Users are now or hereafter shall become subject to National Pretreatment Standards promulgated by the Environmental Protection Agency specifying quantities or concentrations of pollutants or pollutant properties which may be discharged into the POTW. All

Industrial Users subject to a National Pretreatment Standard shall comply with all requirements of such standard, and shall also comply with any additional or more stringent limitations contained in this article. Compliance with National Pretreatment Standards for existing sources subject to such standards or for existing sources which hereafter become subject to such standards shall be within three (3) years following promulgation of the standards unless a shorter compliance time is specified in the standard. Compliance with National Pretreatment Standards for new sources shall be required upon promulgation of the standard. Except where expressly authorized by an applicable National Pretreatment Standard, no Industrial User shall increase the use of process water or in any way attempt to dilute a discharge as a partial or complete substitution for adequate treatment to achieve compliance with such standard.

**(e) Prohibitions on Storm Drainage and Ground Water:**

Storm water, ground water, rain water, street drainage, roof top drainage, basement drainage, sub-surface drainage, or yard drainage if unpolluted shall not be discharged through direct or indirect connections to a community sewer unless a storm sewer or other reasonable alternative for removal of such drainage does not exist, and then only when such discharge is permitted by the user's wastewater discharge permit and the appropriate fee is paid for the volume thereof.

**(f) Unpolluted Water:**

Unpolluted water, including, but not limited to cooling water or process water, shall not be discharged through direct or indirect connections to a community sewer except on the same conditions as provided in paragraph (e) hereinabove.

**(g) Limitation on Radioactive Waste:**

No person shall discharge or permit to be discharged any radioactive waste into a community sewer except:

(1) When the person is authorized to use radioactive materials by the Tennessee Department of Public Health or the Nuclear Regulatory Commission;

(2) When the waste is discharged in strict conformity with applicable laws and regulations of the aforementioned agencies, or any other agency having jurisdiction; and

(3) When a copy of permits received from said regulatory agencies have been filed with the Superintendent.

**(h) Limitations on the Use of Garbage Grinders:**

Waste from garbage grinders shall not be discharged into a community sewer except where generated in preparation of food consumed on the premises, and then only where applicable fees therefor are paid. Such grinders must shred the waste to a degree that all particles will be carried freely under normal flow conditions prevailing in the community sewers. Garbage grinders shall not be used for the grinding of plastic, paper products, inert materials, or garden refuse. This provision shall not apply to domestic residences.

**(i) Limitations on Point of Discharge:**

No person shall discharge any substance directly into a manhole or other opening in a community sewer other than through an approved building sewer, unless he shall have been issued a temporary permit by the Superintendent. The Superintendent shall incorporate in such temporary permit such conditions as he deems reasonably necessary to insure compliance with the provisions of this article and the user shall be required to pay applicable charges and fees therefore.

**(j) Septic Tank Pumping, Hauling, and Discharge:**

No person owning vacuum or "cess pool" pump trucks or other liquid waste transport trucks shall discharge directly or indirectly such sewage into the POTW, unless such person shall first have applied for and received a Truck Discharge Operation Permit from the Superintendent. All applicants for a Truck Discharge Operation Permit shall complete such forms as required by the Superintendent, pay appropriate fees, and agree in writing to abide by the provisions of this article and any special conditions or regulations established by the Superintendent. The owners of such vehicles shall affix and display the permit number on the side of each vehicle used for such purposes. Such permits shall be valid for a period of one (1) year from date of issuance, provided that such permit shall be subject to revocation by the Superintendent for violation of any provision of this article or reasonable regulation established by the Superintendent. Such permits shall be limited to the discharge of domestic sewage waste containing no industrial waste. The Superintendent shall designate the locations and times where such trucks may be discharged, and may refuse to accept any truckload of waste in his absolute discretion where it appears that the waste could interfere with the effective operation of the treatment works or any sewer line or appurtenance thereto.

**(k) Other Holding Tank Waste:**

No person shall discharge any other holding tank waste into the POTW unless he shall have applied for and have been issued a permit by the Superintendent. Unless otherwise allowed under the terms and conditions of the permit, a separate permit must be secured for each separate discharge. The permit shall state the specific location of discharge, the time of day the discharge is to occur, the volume of the discharge, and shall limit the wastewater constituents and characteristics of the discharge. Such user shall pay any applicable charges or fees therefor, and shall comply with the conditions of the permit issued by the Superintenent. Provided, however, no permit will be required to discharge domestic waste from a recreational vehicle holding tank provided such discharge is made into an approved facility designed to receive such waste.

**(l) Limitations on Wastewater Strength:**

No person or user shall discharge wastewater in excess of the concentration set forth in the table below unless: (1) an exception has been granted the user under the provisions of Section 32-47; or (2) the wastewater discharge permit of the user provides as a special permit condition a higher interim concentration level in conjunction with a requirement that the user construct a pretreatment facility or institute changes in operation and maintenance procedures to reduce the concentration of pollutants to levels not exceeding the standards set forth in the table within a fixed period of time.

| Parameter | Maximum Concentration mg/1 (24 Hour Flow Proportional Composite Sample | Maximum Instantaneous Concentration mg/1 (Grab Sample) |
|---|---|---|
| Biochemical Oxygen Demand | • | — |
| Chemical Oxygen Demand | • | — |
| Suspended Solids | • | — |
| Arsenic (As) | 1.0 | 2.0 |
| Cadmium (Cd) | 1.0 | 2.0 |
| Chromium-Total (Cr) | 5.0 | 10.0 |
| Chromium-Hexavalent (Cr+6) | 0.05 | 0.10 |
| Copper (Cu) | 5.0 | 10.0 |
| Cyanide (CN) | 2.0 | 4.0 |
| Lead (Pb) | 1.5 | 3.0 |
| Mercury (Hg) | 0.1 | 0.2 |
| Nickel (Ni) | 5.0 | 10.0 |
| Selenium (Se) | 1.0 | 2.0 |
| Silver (Ag) | 1.0 | 2.0 |
| Zinc (Zn) | 5.0 | 10.0 |
| Oil & Grease (Petroleum and/or Mineral) | 100.0 | 200.0 |

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Limited by design capacity.

**(m) Criteria to Protect the Treatment Plant Influent:**

The Superintendent shall monitor the treatment works influent for each parameter in the following table. The Industrial Users shall be subject to the reporting and monitoring requirements set forth in Section 32-48 and Section 32-49 as to these parameters. In the event that the influent at the treatment works reaches or exceeds the levels established by said table, the Superintendent shall initiate technical studies to determine the cause of the influent violation, and shall recommend to the Board such remedial measures as are necessary, including but not limited to recommending the establishment of new or revised pretreatment levels for these parameters. The Superintendent shall also recommend changes to any of these criteria in the event the POTW effluent standards are changed or in the event that there are changes in any appliable law or regulation affecting same or in the event changes are needed for more effective operation of the POTW.

| Parameter | Maximum Concentration mg/1 (24 Hour Flow Proportional Composite Sample) | Maximum Instantaneous Concentration (mg/1) (Grab Sample) |
|---|---|---|
| Aluminum dissolved (Al) | 15.00 | 30.0 |
| Antimony (Sb) | 0.50 | 1.0 |
| Arsenic (As) | 0.05 | 0.1 |
| Barium (Ba) | 2.50 | 5.0 |
| Boron (B) | 1.00 | 2.0 |
| Cadmium (Cd) | 0.01 | 0.02 |
| Chromium-total (Cr) | 1.50 | 3.0 |
| Cobalt (Co) | 5.00 | 10.0 |
| Copper (Cu) | 0.40 | 0.8 |
| Cyanide (CN) | 0.05 | 0.1 |
| Fluoride (F) | 10.00 | 20.0 |
| Iron (Fe) | 5.00 | 10.0 |
| Lead (Pb) | 0.10 | 0.2 |
| Manganese (Mn) | 0.50 | 1.0 |
| Mercury (Hg) | 0.015 | 0.03 |
| Nickel (Ni) | 0.50 | 1.0 |
| Phenols | 1.00 | 2.0 |
| Selenium (Se) | 0.005 | 0.01 |
| Silver (Ag) | 0.05 | 0.1 |
| Titanium-dissolved (Ti) | 1.00 | 2.0 |

| Parameter | Maximum Concentration mg/l (24 Hour Flow Proportional Composite Sample) | Maximum Instantaneous Concentration (mg/l) (Grab Sample) |
|---|---|---|
| Zinc (Zn) | 2.00 | 4.0 |
| Total Kjeldahl Nitrogen (TKN) | 45.00 | 90.0 |
| Oil & Grease | 25.00 | 50.0 |
| MBAS | 5.00 | 10.0 |
| Total Dissolved Solids | 1,875.00 | 3,750.0 |
| BOD | * | |
| COD | * | |
| Suspended Solids | * | |

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*Not to exceed the design capacity of treatment works.

**(n) Pretreatment Requirements:**

Users of the POTW shall design, construct, operate, and maintain wastewater pretreatment facilities whenever necessary to reduce or modify the user's wastewater constituency to achieve compliance with the limitations in wastewater strength set forth in Paragraph (1) of this Section, to meet applicable National Pretreatment Standards, or to meet any other wastewater condition or limitation contained in the user's wastewater discharge permit.

**(o) Plans and Specifications:**

Plans, specifications, and operating procedures for such wastewater pretreatment facilities shall be prepared by a registered engineer, and shall be submitted to the Superintendent for review in accordance with accepted engineering practices. The Superintendent shall review said plans within 45 days and shall recommend to the user any appropriate changes. Prior to beginning construction of said pretreatment facility, the user shall submit a set of construction plans and specifications to be maintained by the Superintendent. Prior to beginning construction the user shall also secure such building, plumbing, or other permits that may be required by this code. The user shall construct said pretreatment facility within the time provided in the user's wastewater discharge permit. Following completion of construction the user shall provide the Superintendent with "as built" drawings to be maintained by the Superintendent.

**(p) Prevention of Accidental Discharges:**

All Industrial Users shall provide such facilities and institute such procedures as are reasonably necessary to prevent or minimize the potential for accidental discharge into the POTW of waste regulated by this Article from liquid or raw material storage areas, from truck and rail car loading and unloading areas, from inplant transfer or processing and materials handling areas, and from diked areas or holding ponds of any waste regulated by this article. The wastewater discharge permit of any user who has a history of significant leaks, spills, or other accidental discharge of waste regulated by this article shall be subject on a case-by-case basis to a special permit condition or requirement for the construction of facilities or establishment of procedures which will prevent or minimize the potential for such accidental discharge. Plans, specifications, and operating procedures for such special permit conditions shall be developed by the user and submitted to the Superintendent for review under the provisions of paragraph (o) of this section.

## SECTION 32-47.
## EXCEPTION TO WASTEWATER STRENGTH STANDARD.

**(a) Applicability.**

This Section provides a method for nonresidential users subject to the limitation on wastewater strength parameters listed in Section 32-46 (1) to apply for and receive a temporary exception to the discharge level for one or more parameters.

**(b) Time of Application.**

Applicants for a temporary exception shall apply for same at the time they are required to apply for a wastewater discharge permit or a renewal thereof. Provided, however, that the Superintendent shall allow applications at any time unless the applicant shall have submitted the same or substantially similar application within the preceding year and the same shall have been denied by the Board.

**(c) Written Applications.**

All applications for an exception shall be in writing, and shall contain sufficient information for evaluation of each of the factors to be considered by the Board pursuant to Paragraph (e) hereof.

**(d) Review by Superintendent.**

All applications for an exception shall be reviewed by the Superintendent. If the application does not contain sufficient information for complete evaluation, the Superintendent shall notify the applicant of the deficiencies and request additional information. The applicant shall have thirty (30) days following notification by the Superintendent to correct such deficiencies. This thirty (30) day period may be extended by the Board upon application and for just cause shown. Upon receipt of a complete application the Superintendent shall evaluate same within thirty (30) days and shall submit his recommendations to the Board at its next regularly scheduled meeting.

**(e) Review by Board.**

The Board shall review and evaluate all applications for an exception and shall take into account the following factors:

(1) The Board shall consider whether or not the applicant is subject to a National Pretreatment Standard containing discharge limitations more stringent than those in Section 32-46 and grant an exception only if such exception may be granted within limitations of applicable federal regulations;

(2) The Board shall consider whether or not the exception would apply to discharge of a substance classified as a toxic substance under regulations promulgated by the Environmental Protection Agency under the provisions of Section 307(a) of the Act (33 U.S.C 1317), and then grant an exception only if such exception may be granted with the limitations of applicable federal regulations;

(3) The Board shall consider whether or not the granting of an exception would create conditions that would reduce the effectiveness of the treatment works taking into consideration the concentration of said pollutant in the treatment works' influent and the design capability of the treatment works;

(4) The Board shall consider whether or not the granting of an exception might cause the treatment works to violate the limitations in its NPDES permit taking into consideration the concentration of the pollutant and in the treatment works' influent and the demonstrated ability of the treatment works to consistently remove such pollutant;

(5) The Board shall consider whether or not the granting of an exception would cause elements or compounds to be present in the sludge of the treatment works which would prevent sludge use or disposal by the City or which would cause the City to violate any regulation promulgated by EPA under the provisions of Section 405 of the Act (33 U.S.C. 1345);

(6) The Board may consider the cost of pretreatment or other types of control techniques which would be necessary for the user to achieve effluent reduction, but prohibitive cost alone shall not be the basis for granting an exception;

(7) The Board may consider the age of equipment and industrial facilities involved to the extent that such factors affect the quality or quantity of wastewater discharge;

(8) The Board may consider the process employed by the user and process changes available which would affect the quality or quantity of wastewater discharge;

(9) The Board may consider the engineering aspects of various types of pretreatment or other control techniques available to the user to improve the quality or quantity of wastewater discharge;

(10) The Board may consider an application for an exception based upon the fact that water conservation measures instituted by the user or proposed by the user result in a higher concentration of particular pollutants in the wastewater discharge of the user without increasing the amount of mass of pollutants discharged. To be eligible for an exception under this subparagraph, the applicant must show that except for water conservation measures, the applicant's discharge has been or would be in compliance with the limitations on wastewater strength set forth in Section 32-46(1). Provided, however, no such exception shall be granted if the increased concentration of pollutants in the applicant's wastewater would have a significant adverse impact upon the operation of the POTW.

**(f) Good Management Practices Required:**

The Board shall not grant an exception unless the applicant shall demonstrate to the Board that he is utilizing "good management practices" (GMP) to prevent or reduce his contribution of pollutants to the POTW. GMP's include but are not limited to preventative operating and maintenance procedures, schedule of activities, process changes, prohibiting of activities, and other management practices to reduce the quality or quantity of effluent discharged and to control plant site runoff, spillage, leaks, and drainage from raw material storage.

**(g) Exception May Be Granted Following Review:**

The Board shall review the application for an exception at the first regularly scheduled meeting following recommendation of the Superintendent. It may grant the application for exception with such conditions or limitations as may have been recommended by the Superintendent without a hearing provided that no person, including the applicant, shall object thereto, and provided further that the Board finds that the granting of the exception with such conditions as have been recommended by the Superintendent will be in compliance with the provisions of this article.

**(h) Hearing.**

In the event that the applicant objects to recommendations of the Superintendent concerning conditions to be imposed upon the applicant, the Board desires a hearing to further investigate the matter, or any interested party granted permission by the Board to intervene objects to the granting of the exception, then in such event the Board shall schedule a hearing within ninety (90) days following presentation of the matter by the Superintendent to resolve such matters. At such hearing, the applicant, the Superintendent, and any intervening party shall have the right to present relevant proof by oral or documentary evidence. The procedure set forth in Section 32-54 hereof shall be applicable to such a hearing. The applicant shall bear the burden of proof in such hearing.

## SECTION 32-48.
## WASTEWATER DISCHARGE PERMIT, DISCHARGE REPORTS, AND ADMINISTRATION.

**(a) Applicability:**

The provisions of this section are applicable to all Industrial Users of the POTW. At the time of the enactment of this section, the City of Chattanooga does not have an "Approved POTW Pretreatment Program" as that term is defined in 40 C.F.R. Section 403.3(d), and any permits issued hereunder to Industrial Users who are subject to or who become subject to a "National Pretreatment Standard" as that term is defined in 40 C.F.R. 403.3(i) shall be conditioned upon the Industrial User also complying with all applicable substantive and procedural requirements promulgated by the Environmental Protection Agency or the State of Tennessee in regard to such "National Pretreatment Standards".

**(b) Application and Permit Requirements for Industrial Users:**

All Industrial Users of the POTW prior to discharging non-domestic waste into the POTW shall apply for and obtain a wastewater discharge permit in the manner hereinafter set forth. All original applications shall be accompanied by a report containing the information specified in subparagraph (c) hereof. All original applications shall also include a site plan, floor plan, mechanical and plumbing plans with sufficient detail to show all sewers and appurtenances in the user's premises by size, location, and elevation; and the user shall submit to the Superintendent revised plans whenever alterations or additions to the user's premises affect said plans. Any currently connected user discharging waste other than domestic waste who has not heretofore filed such a report shall file same with the Superintendent prior to February 21, 1979.

**(c) Report Requirements:**

The report required by Paragraph (b) above or other provisions of this article for all Industrial Users shall contain in units and terms appropriate for evaluation the information listed in Subparagraphs (1) through (5) below. Industrial Users subject to National Pretreatment Standards shall submit to the Superintendent a report which contains the information listed in Subparagraphs (1) through (7) below within one hundred and eighty days (180) after the promulgation by the Environmental Protection Agency of a National Pretreatment Standard under Section 307 (b) or (c) (33 U.S.C. 1317 (b) or (c)) of the Act or by February 21, 1979 where such National Pretreatment Standards have been promulgated prior to the effective date of this article; provided that Industrial Users subject to the requirements of 40 C.F.R. Section 403.12 may file with the Superintendent a copy of a report submitted to the "Control Authority" as defined in said section in lieu of the report herein provided. Industrial Users who are unable to achieve a discharge limit set forth in Section 32-46 hereof without improved operation and maintenance procedures or pretreatment shall submit a report which contains the information listed in Subparagraph (1) through (7) of this paragraph. As specified hereinabove, the report shall contain all or applicable portions of the following:

(1) the name and address of the Industrial User;

(2) the location of such Industrial User;

(3) the nature, average rate of production and Standard Industrial Classification of the operation(s) carried out by such Industrial User;

(4) the average and maximum flow of the discharge from such Industrial User to the POTW, in gallons per day;

(5) the nature and concentration of pollutants in the discharge from each regulated process from such Industrial User and identification of any applicable Pretreatment Standards and Requirements. The concentration shall be reported as a maximum or average level as provided for in the applicable Pretreatment Standard. If an equivalent concentration limit has been calculated in accordance with any Pretreatment Standard, this adjusted concentration limit shall also be submitted to the Superintendent for approval;

(6) a statement, reviewed by an authorized representative of the Industrial User (as defined in Section 32-45) and certified by a qualified professional, indicating whether Pretreatment Standards are being met on a consistent basis and, if not, whether additional operation and maintenance procedures or additional

pretreatment is required for the Industrial User to meet the Pretreatment Standards and Requirements; and

(7) if additional pretreatment or operation and maintenance procedure will be required to meet the Pretreatment Standards, then the report shall contain the shortest schedule by which the Industrial User will provide such additional pretreatment. The completion date in this schedule shall not be later than the compliance date established for the applicable Pretreatment Standard.

For purposes of this paragraph when the context so indicates the phrase "Pretreatment Standard" shall include either a National Pretreatment Standard or a pretreatment standard imposed as a result of the User's discharging any incompatible pollutant regulated by Section 32-46 hereof. For purpose of this paragraph the term "pollutant" shall include any pollutant identified in a National Pretreatment Standard or any incompatible pollutant indentified in Section 32-46 hereof.

**(d) Incomplete Applications:**

The Superintendent will act only on applications that are accompanied by a report which contains all the information required in paragraph (c) above. Persons who have filed incomplete applications will be notified by the Superintendent that the application is deficient and the nature of such deficiency and will be given thirty (30) days to correct the deficiency. If the deficiency is not corrected within thirty (30) days or within such extended period as allowed by the Superintendent, the Superintendent shall submit the application for a permit to the Board with a recommendation that it be denied and notify the applicant in writing of such action.

**(e) Evaluation of Applications:**

Upon receipt of complete applications, the Superintendent shall review and evaluate the applications and shall propose such special permit conditions as he deems advisable. All wastewater discharge permits shall be expressly subject to all the provisions of this article and all other applicable Ordinances, laws, and regulations. The Superintendent may also propose that the wastewater discharge permit be subject to one or more special conditions in regard to any of the following:

(1) Pretreatment requirements;

(2) The average and maximum wastewater constituents and characteristics;

(3) Limits on rate and time of discharge or requirements for flow regulations and equalization;

(4) Requirements for installation of inspection and sampling facilities;

(5) Specifications for monitoring programs which may include sampling locations, frequency and method of sampling, number, types and standards for tests and reporting schedule;

(6) Requirements for submission of technical reports or discharge reports;

(7) Requirements for maintaining records relating to wastewater discharge;

(8) Mean and maximum mass emission rates, or other appropriate limits when incompatible pollutants (as set forth in Section 32-46) are proposed or present in the user's wastewater discharge;

(9) Other conditions as deemed appropriate by the Superintendent to insure compliance with this article or other applicable ordinance, law, or regulation;

(10) A reasonable compliance schedule, not to extend beyond July 1, 1983, or such earlier date as may be required by other applicable law or regulation, whichever is sooner, to ensure the Industrial user's compliance with pretreatment requirements or improved methods of operation and maintenance;

(11) Requirements for the installation of facilities to prevent and control accidental discharge or "spills" at the user's premises;

(12) The unit charge or schedule of charges and fees for the wastewater to be discharged to a community sewer.

**(f) Applicant to be Notified of Proposed Permit Conditions; Right to Object:**

(1) Upon completion of his evaluation, the Superintendent shall notify the applicant of any special permit conditions which he proposed be included in the wastewater discharge permit;

(2) The applicant shall have forty-five (45) days from and after the date of the Superintendent's recommendations for special permit conditions to review same and file written objections with the Superintendent in regard to any special permit conditions recommended by the Superintendent. The Superintendent may, but shall not be required, to schedule a meeting with applicant's authorized representative within fifteen (15) days following receipt of the applicant's objections, and attempt to resolve disputed issues concerning special permit conditions;

(3) If applicant files no objection to special permit conditions proposed by the Superintendent, or a subsequent agreement is

reached concerning same, the Superintendent shall issue a wastewater discharge permit to applicant with such special conditions incorporated therein. Otherwise, the Superintendent shall submit the disputed matters to the Board for resolution as hereinafter provided.

**(g) Board to Establish Permit Conditions; Hearing**

(1) In the event the Superintendent cannot issue a wastewater discharge permit pursuant to Paragraph (f) above, the Superintendent shall submit to the Board his proposed permit conditions and the applicant's written objections thereto at the next regularly scheduled meeting of the Board;

(2) The Board shall schedule a hearing within ninety (90) days following the meeting referred to hereinabove unless such time be extended for just cause shown to resolve any disputed matters relevant to such permit;

(3) The Superintendent shall notify the applicant of the date, time, place, and purpose of the hearing scheduled by the Board. The applicant shall have the right to participate in such hearing and present any relevant evidence to the Board concerning proposed special permit conditions or other matters being considered by the Board;

(4) Following such hearing or such additional hearings as shall be deemed necessary and advisable by the Board, the Board shall establish such special permit conditions as it deems advisable to insure the applicant's compliance with this article or other applicable law or regulation and direct the Superintendent to issue a wastewater discharge permit to the applicant accordingly.

**(h) Compliance Schedule and Reporting Requirements:**

The following conditions shall apply to the schedule required by Paragraphs (c), (e), or (g) of this section:

(1) The schedule shall contain increments of progress in the form of dates for the commencement and completion of major events leading to the construction and operation of additional pretreatment requirements for the Industrial User to meet the applicable Pretreatment Standards (e.g. hiring an engineer, completing preliminary plans, completing final plans, executing contract for major components, commencing construction, completing construction, etc.).

(2) No increment referred to in Subparagraph (h) (1) shall exceed nine (9) months.

(3) Not later than fourteen (14) days following each date in the schedule and the final date for compliance, the Industrial User shall submit a progress report to the Control Authority and the Superintendent including, as a minimum, whether or not it complied with the increment of progress to be met on such date and, if not, the date on which it expects to comply with this increment of progress, the reason for the delay, and steps being taken by the Industrial User to return the construction to the schedule established. In no event shall more than nine (9) months elapse between such progress reports to the Control Authority and the Superintendent.

(4) Within ninety (90) days following the date for final compliance with applicable Pretreatment Standards or, in the case of a New Source, following commencement of the introduction of wastewater into the POTW, any Industrial User subject to Pretreatment Standards and Requirements shall submit to the Control Authority and the Superintendent a report indicating the nature and concentration of all pollutants in the discharge from the regulated process which are limited by Pretreatment Standards and Requirements and the average and maximum daily flow for these process units in the Industrial User which are limited by such Pretreatment Standards or Requirements. The report shall state whether the applicable Pretreatment Standards or Requirements are being met on a consistent basis and, if not, what additional Operation and Maintenance procedure or pretreatment is necessary to bring the Industrial User into compliance with the applicable Pretreatment Standards or Requirements. This statement shall be signed by an authorized representative of the Industrial User, as defined in Section 32-45 of this Article, and certified to by a qualified professional.

(5) (i) Any Industrial User subject to a Pretreatment Standard, after the compliance date of such Pretreatment Standard, or, in the case of a New Source, after commencement of the discharge into the POTW, shall submit to the Control Authority and the Superintendent during the months of June and December, unless required more frequently in the Pretreatment Standard or by the Control Authority and the Superintendent, a report indicating the nature and concentration, of pollutants in the effluent which are limited by such Pretreatment Standards. In addition, this report shall include a record of all daily flows which during the reporting period exceeded the average daily flow reported in Paragraph (c) 4 of this section. At the discretion of the Control Authority or the Superintendent, as applicable, and in consideration of such factors as local high or low flow rates, holidays,

budget cycles, etc., the Control Authority or the Superintendent, as applicable, may agree to alter the months during which the above reports are to be submitted. (ii) The Control Authority or the Superintendent, as applicable, may impose mass limitations on Industrial Users which are using dilution to meet applicable Pretreatment Standards or Requirements or in other cases where the imposition of mass limitations are appropriate. In such cases, the report required by subparagraph (i) of this paragraph shall indicate the mass of pollutants regulated by Pretreatment Standards in the effluent of the Industrial User.

(6) The Industrial User shall notify the POTW immediately by telephone of any slug loading, as defined by Section 32-46 (b)(4), by the Industrial User.

(7) The reports required in this section shall contain the results of sampling and analysis of the discharge, including the flow and the nature and concentration, or production and mass limits where requested by the Control Authority or the Superintendent, as applicable, of pollutants contained therein which are limited by the applicable Pretreatment Standards. The frequency of monitoring shall be prescribed in the applicable pretreatment standard. All analyses shall be performed in accordance with procedures established by the Environmental Protection Agency under the provisions of section 304 (h) of the Act (33 U.S.C. 1314(h)) and contained in 40 C.F.R. Part 136 and amendments thereto or with any other test procedures approved by the Environmental Protection Agency or the Superintendent. Sampling shall be performed in accordance with the techniques approved by the Environmental Protection Agency, or the Superintendent.

(8) Any Industrial User required by this paragraph to submit a similar report to the "Control Authority" under the provisions of 40 C.F.R. 403.12, may submit to the Superintendent a copy of said report in lieu of a separate report to the Superintendent, provided that all information required by this article is included in the report to the "Control Authority."

**(i) Maintenance of Records:**

Any Industrial User subject to the reporting requirements established in this section shall maintain records of all information resulting from any monitoring activities required by this section. Such records shall include for all samples:

(1) The date, exact place, method, and time of sampling and the names of the persons taking the samples;

(2) The dates analyses were performed;

(3) Who performed the analyses;

(4) The analytical techniques/methods used; and

(5) The results of such analyses.

(j) Any Industrial User subject to the reporting requirement established in this section shall be required to retain for a minimum of three (3) years any records of monitoring activities and results (whether or not such monitoring activities are required by this section) and shall make such records available for inspection and copying by the Superintendent, Director of the Division of Water Quality Control Tennessee Department of Public Health, or the Environmental Protection Agency. This period of retention shall be extended during the course of any unresolved litigation regarding the Industrial User or when requested by the Superintendent, the Director, or the Environmental Protection Agency.

**(k) Duration of Permits:**

Wastewater discharge permits shall be issued for a period of three (3) years. Provided that original permits may be issued for a period between two (2) and three (3) years for the administrative convenience of the Superintendent so as to stagger the renewal dates of the permits. Provided further that permits issued to users granted an exception pursuant to Section 32-47 shall be issued for a period of one (1) year. Notwithstanding the foregoing, users becoming subject to a National Pretreatment Standard shall apply for new permits on the effective date of such National Pretreatment Standards. The Superintendent shall notify in writing any user whom he has cause to believe is subject to a National Pretreatment Standard of the promulgation of such federal regulations, but any failure of the Superintendent in this regard shall not relieve the user of the duty of complying with such National Pretreatment Standards. A user must apply in writing for a renewal permit within the period of time not more than ninety (90) days and not less than thirty (30) days prior to expiration of the current permit. Provided further that limitations or conditions of a permit are subject to modification or change as such changes may become necessary due to changes in applicable water quality standards, changes in the City's NPDES permit, changes in Section 32-46(1), changes in other applicable law or regulation, or for other just cause, users shall be notified of any proposed changes in their permit by the Superintendent at least thirty (30) days prior to the effective date of the change. Any change or new condition in a permit shall include a provision for a reasonable time schedule for compliance. The user may appeal the decision of the Superintendent in regard to any changed permit conditions as otherwise provided in this article.

**(l) Transfer of a Permit:**

Wastewater discharge permits are issued to a specific user for a specific operation. A wastewater discharge permit shall not be reassigned or transferred or sold to a new owner, new user, or for different premises, unless approved by the Superintendent.

**(m) Revocation of Permit:**

Any permit issued under the provisions of this Article is subject to be modified, suspended, or revoked in whole or in part during its term for cause including but not limited to, the following:

(1) Violation of any terms or conditions of the wastewater discharge permit or other applicable law or regulation;

(2) Obtaining of a permit by misrepresentation or failure to disclose fully all relevant facts; or

(3) A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.

## SECTION 32-49.
## INSPECTIONS, MONITORING, AND ENTRY

**(a)** Whenever required to carry out the objective of this article, including but not limited to (1) developing or assisting in the development of any effluent limitation, or other limitation, prohibition, or effluent standard, pretreatment standard, standard of performance, or permit condition under this article; (2) determining whether any person is in violation of any such effluent limitation, or other limitation, prohibition or effluent standard, pretreatment standard, standard of performance, or permit condition; (3) any requirement established under this section:

(A) The Superintendent shall require any non-domestic user to (i) establish and maintain such records, (ii) make such reports, (iii) install, use, and maintain such monitoring equipment or methods (including where appropriate, biological monitoring methods), (iv) sample such effluents (in accordance with such methods, at such locations, at such intervals, and in such manner as the Superintendent shall prescribe), and (v) provide such other information as he may reasonably require; and

(B) The Superintendent or his authorized representative, upon presentation of his credentials—

( i) shall have a right of entry to, upon, or through any premises in which an effluent source is located or in which any records required to be maintained under clause (A) of this subsection are located, and

(ii) may at reasonable times have access to and copy any records, inspect any monitoring equipment or method required under clause (A), and sample any effluents which the owner or operator of such source is required to sample under such clause.

**(b)** Any records, reports, or information obtained under this section (1) shall, in the case of effluent data, be related to any applicable effluent limitations, toxic, pretreatment, or permit condition, and (2) shall be available to the public, except that upon a showing satisfactory to the Superintendent by any person that records, reports, or information, or particular part thereof (other than effluent data), to which the Superintendent has access under this section, if made public would divulge methods or processes entitled to protection as trade secrets of such person, the Superintendent shall consider such record, report, or information, or particular portion thereof confidential in accordance with the purposes of this article, except that such record, report, or information may be disclosed to officers, employees, or authorized representatives of the State of Tennessee or the United States concerned with carrying out the provisions of the Clean Water Act or when relevant in any proceeding under this article or other applicable laws.

**(c)** Specific requirements under the provisions of paragraph (a)(A) of this section shall be established by the Superintendent, or the Board as applicable, for each Industrial User and such requirements shall be included as a condition of the user's wastewater discharge permit. The nature or degree of any requirement under this provision shall depend upon the nature of the user's discharge, the impact of the discharge on the POTW, the volume of water discharged, and the technical feasibility of and economic reasonableness of any such requirement imposed. The user shall be required to design any necessary facility, and to submit detailed design plans and operating procedures to the Superintendent for review in accordance with accepted engineering practices. The Superintendent shall review said plans within 45 days and shall recommend to the user any change he deems appropriate.

**(d)** Upon approval of plans as specified in paragraph (c), the user shall secure such building, electrical, plumbing or other permits as may be required by this Code and proceed to construct any necessary facility and establish such operating procedures as are required within the time provided in the user's Wastewater Discharge Permit.

**(e)** In the event any user denies the Superintendent or his authorized representative of the right of entry, to or upon the user's premises, for purposes of inspection, sampling effluents, or inspecting and copying records, or performing such other duties as shall be imposed upon him by this section, the Superintendent shall seek a warrant or use such other legal procedures as shall be advisable and reasonably necessary to discharge his duties under this section.

(f) Any user failing or refusing to discharge any duty imposed upon him under the provisions of this section, or who denies the Superintendent the right to enter upon the user's premises for purposes of inspection, sampling effluents, inspecting and copying records, or such other duties as may be imposed upon him by this section, shall be deemed to have violated the conditions of his Wastewater Discharge Permit and such permit shall be subject to modification, suspension, or revocation under the procedures established in this article.

## SECTION 32-50.
## DANGEROUS DISCHARGE NOTIFICATION REQUIREMENTS.

**(a) Telephone Notification.**

Any person causing or suffering any discharge whether accidental or not, which presents or may present an imminent or substantial endangerment to the health and welfare of persons, to the environment, or which is likely to cause interference with the POTW, shall notify the Superintendent immediately by telephone. In the absence of the Superintendent, notification shall be given to the City employee then in charge of the treatment works.

**(b) Written Report.**

Within five (5) days following such occurrence, the user shall provide the Superintendent with a detailed written report describing the cause of the dangerous discharge and measures to be taken by the user to prevent similar future occurrences. Such notification shall not relieve the user of any expense, loss, damage, or other liability which may be incurred as a result of damage to the POTW, fish kills, or any other damage to person or property; nor shall such notification relieve the user of any fines, civil penalties, or other liability which may be imposed by this article or other applicable law.

**(c) Notice to Employees:**

A notice shall be permanently posted on the user's bulletin board or other prominent place advising employees whom to call in the event of a dangerous discharge. Employers shall insure that all employees who may cause or suffer such a dangerous discharge to occur are advised of the emergency notification procedure.

## SECTION 32-51.
## ENFORCEMENT AND ABATEMENT:

**(a) Public Nuisance.**

Discharge of wastewater in any manner in violation of this article, or of any condition of a wastewater discharge permit is hereby declared a public nuisance and shall be corrected or abated as provided herein.

**(b) Superintendent to Notify User of Violation.**

Whenever the Superintendent determines or has reasonable cause to believe that a discharge of wastewater has occurred in violation of the provisions of this article, the user's wastewater discharge permit, or any other applicable law or regulation, he shall notify the user of such violation. Failure of the Superintendent to provide notice to the user shall not in any way relieve the user from any consequences of a wrongful or illegal discharge.

**(c) Conciliation Meetings.**

The Superintendent may, but shall not be required, to invite representatives of the user to a conciliation meeting to discuss the violation and methods of correcting the cause of the violation. Such additional meetings as the Superintendent and the user deem advisable may be held to resolve the problem. If the user and the Superintendent can agree to appropriate remedial and preventative measures, they shall commit such agreement to writing with provisions for a reasonable compliance schedule and the same shall be incorporated as a supplemental condition of the user's wastewater discharge permit. If an agreement is not reached through the conciliation process within sixty (60) days, the Superintendent shall institute such other actions as he deems advisable to insure the user's compliance with the provisions of this article or other law or regulation.

**(d) Show Cause Hearing.**

The Superintendent may issue a show cause notice to the user directing the user to appear before the Wastewater Regulations Board at a specified date and time to show cause why the user's wastewater discharge permit should not be modified, suspended, or revoked for causing or suffering violation of this Article, or other applicable law or regulation, or conditions in the wastewater discharge permit of the user. If the Superintendent seeks to modify the user's wastewater discharge permit to establish wastewater strength limitations or other control techniques to prevent future violations, he shall notify the user of the general nature of the recommendations he shall make to the Board. If the Superintendent seeks to suspend or revoke the user's wastewater discharge permit, he shall notify the user of the nature of the violation for which revocation or suspension is sought with sufficient specificity as to the character of the violation and the dates at which such violation occurred to enable the user to prepare his defense. Such notice shall be mailed to the user by certified mail, return receipt requested, or shall be personally delivered to the user at least twenty (20) days prior to the scheduled hearing date.

**(e) Citation to City Court.**

The Superintendent may cite the user to Chattanooga City Court for violation of any provision of this article or other ordinance. A violation of any condition of the user's wastewater discharge permit shall be deemed to be a violation of this article.

**(f) Injunctive Relief.**

Upon resolution of the Board of Commissioners approving same, the Superintendent shall in the name of the City of Chattanooga file in Circuit or Chancery Court of Hamilton County, Tennessee, or such other courts as may have jurisdiction, a suit seeking the issuance of an injunction, damages, or other appropriate relief to enforce the provisions of this article or other applicable law or regulation. Suit may be brought to recover any and all damages suffered by the City as a result of any action or inaction of any user or other person who causes or suffers damage to occur to the POTW or for any other expense, loss or damage of any kind or nature suffered by the City.

**(g) Assessment of Damages to Users:**

When a discharge of waste causes an obstruction, damage, or any other impairment to the facilities, or any expense of whatever character or nature to the City, the Superintendent shall assess the expenses incurred by the City to clear the obstruction, repair damage to the facility, and any other expenses or damages incurred by the City. The Superientendent shall file a claim with the user or any other person causing or suffering said damages to incur seeking reimbursement for any and all expenses or damages suffered by the City. If the claim is ignored or denied, the Superintendent shall notify the City Attorney to take such measures as shall be appropriate to recover for any expense or other damages suffered by the City.

**(h) Superintendent May Petition For Federal or State Enforcement.**

In addition to other remedies for enforcement provided herein, the Superintendent may petition the State of Tennessee or the United States, Environmental Protection Agency, as appropriate to exercise such methods or remedies as shall be available to such government entities to seek criminal or civil penalties, injunctive relief, or such other remedies as may be provided by applicable federal or state laws to insure compliance by industrial users of applicable pretreatment standards, to prevent the introduction of toxic pollutants or other regulated pollutants into the POTW, or to prevent such other water pollution as may be regulated by state or federal law.

**(i) Emergency Termination of Service.**

In the event of an actual or threatened discharge to the POTW of any pollutant which in the opinion of the Superintendent presents or may

present an imminent and substantial endangerment to the health or welfare of persons, or cause interference with the POTW, the Superintendent or in his absence the person then in charge of the treatment works shall immediately notify the Commissioner of Public Works, Streets, and Airports and the Mayor of the nature of the emergency. The Superintendent shall also attempt to notify the Industrial user or other person causing the emergency and request their assistance in abating same. Following consultation with the aforementioned officials of the City or in their absence such elected officials of the City as may be available, the Superintendent shall temporarily terminate the service of such user or users as are necessary to abate the condition when such action appears reasonably necessary. Such service shall be restored by the Superintendent as soon as the emergency situation has been abated or corrected.

(j) The Superintendent shall report to the Board his intent to institute any action under the provisions of subsections (e), (f), and (h) hereof and seek the advice of the Board in regard thereto, unless he shall determine that immediate action is advisable.

## SECTION 32-52.
## WASTEWATER REGULATIONS BOARD.

**(a) Established.**

There is hereby established a Board of five (5) members to be known as the "Wastewater Regulations Board."

**(b) Composition; Terms; Filling Vacancies.**

The five (5) members of this Board shall be appointed by the Mayor, subject to the approval of the Board of Commissioners. The Mayor shall appoint one (1) member each with the following qualifications: one (1)environmental engineer or environmental scientist, one (1) attorney, one (1) person employed in an industrial or commercial establishment regulated by this article, and one (1) person that is experienced in the science or practice of finance. The remaining member shall be an officer, agent or employee of the City. The initial members of this Board shall be appointed for terms as follows: one (1) member for a term of one (1) year, two (2) members for a term of two (2) years, and two (2) members for a term of three (3) years. Thereafter, all members shall be appointed for a term of five (5) years. All members shall serve until their successor is appointed and all members shall serve at the pleasure of the Board of Commissioners. In the event of a vacancy, the Mayor shall appoint a member to fill the unexpired term. The Board shall organize and select its own chairman, vice chairman, and secretary who shall serve in said offices for terms one (1) year. The members shall serve without compensation, but shall receive their actual expenses incurred in attending meetings of the Board and the performance of any duties as members of the Board.

**(c) General Duties of the Board.**

In addition to any other duty or responsibility otherwise conferred upon the board by this Article, the Board shall have the duty and power as follows:

(1) To recommend from time to time to the Board of Commissioners that it amend or modify the provisions of this article;

(2) To grant exceptions pursuant to the provisions of Section 32-47 hereof, and to determine such issues of law and fact as are necessary to perform this duty;

(3) To hold hearings upon appeals from orders or actions of the Superintendent as may be provided under any provision of this article;

(4) To hold hearings relating to the suspension, revocation, or modification of a wastewater discharge permit as it is provided in this article and issue appropriate orders relating thereto;

(5) To hold such other hearings relating to any aspect or matter in the administration of this article and to make such determinations and issue such orders as may be necessary to effectuate the purposes of this article;

(6) To request assistance from any officer, agent, or employee of the City of the Chattanooga-Hamilton County Regional Planning Commission to obtain such information or other assistance as the Board might need;

(7) The Board acting through its chairman shall have the power to issue subpoenas requiring attendance testimony and of witnesses and the production of documentary evidence relevant to any matter properly heard by the Board;

(8) The chairman, vice chairman or chairman pro tem shall be authorized to administer oaths to those persons giving testimony before the Board;

(9) The Board shall hold regular meetings, normally one per calendar month, and such special meetings as the Board may find necessary;

(10) Four (4) members of the Board shall constitute a quorum, but a lesser number may adjourn the meeting from day to day.

## SECTION 32-53.
## SUPERINTENDENT.

**(a) Superintendent and Staff.**

The Superintendent and his staff shall be responsible for the administration of all sections of this article. Administratively, he shall be assigned to the Department of Public Works, Streets, and Airports and shall report to the City Engineer and the Commissioner of said department.

**(b) Authority of Superintendent.**

The Superintendent shall have the authority to enforce all sections of this article. He shall be responsible and have the authority to operate the various treatment works. He shall be responsible for the preparation of operating budgets and recommendations to the Commissioner of Public Works, Steets and Airports concerning activities within his responsibility and authority.

**(c) Records.**

The Superintendent shall keep in his office all applications required under this article, a complete record thereof, including a record of all wastewater discharge permits. He shall also maintain the minutes and other records of the Wastewater Regulations Board.

**(d) Superintendent to Assist Board.**

The Superintendent shall attend all meetings of the Wastewater Regulations Board, or whenever it is necessary for him to be absent he shall send a designated representative, and shall make such reports to and assist said Board in the administration of this article.

(e) The Superintendent shall notify Industrial Users identified in 40 C.F.R. 403.8 (f)(2) and (i) of any applicable pretreatment standards or other applicable requirements promulgated by the Environmental Protection Agency under the provisions of section 204(b) of the Act (33 U.S.C. 1284), section 405 of the Act (33 U.S.C. 1345), or under the provisions of sections 3001 (42 U.S.C. 6921), 3004 (42 U.S.C. 6921) or 4004 (42 U.S.C. 6944) of the Solid Waste Disposal Act. Failure of the Superintendent to so notify Industrial Users shall not relieve said users from the responsibility of complying with said requirements.

(f) The Superintendent shall comply with all applicable public participation requirements of section 101(e) of the Act (33 U.S.C. 1251 (e) and 40 C.F.R. Part 105 in the enforcement of National Pretreatment Standards. The Superintendent shall at least annually provide public notification, in the largest daily newspaper published in Chattanooga, of Industrial Users during the previous twelve (12) months which at least once were not in compliance with the applicable Pretreatment

Standards or other pretreatment requirements. The notification shall summarize enforcement actions taken by the control authorities during the same twelve (12) months. An Industrial User shall be deemed to be in compliance with applicable Pretreatment Standards or other pretreatment requirements if he has completed applicable increments of progress under the provisions of any compliance schedule in the user's wastewater discharge permit or if the user has been granted an exception under the provisions of Section 32-47.

## SECTION 32-54.
## WASTEWATER REGULATIONS BOARD HEARING PROCEDURE; JUDICIAL REVIEW.

**(a)** The Wastewater Regulations Board shall schedule an adjudicatory hearing to resolve disputed questions of fact and law whenever provided by any provision of this article.

**(b)** At any such hearing, all testimony presented shall be under oath or upon solemn affirmation in lieu of oath. The Board shall make a record of such hearing, but the same need not be a verbatim record. Any party coming before the Board shall have the right to have said hearing recorded stenographically, but in such event the record need not be transcribed unless any party seeks judicial review of the order or action of the Board by common law writ of certiorari, and in such event the parties seeking such judicial review shall pay for the transcription and provide the Board with the original of the transcript so that it may be certified to the Court.

**(c)** The Chairman may issue subpoenas requiring attendance and testimony of witnesses or the production of evidence, or both. A request for issuance of a subpoena shall be made by lodging with the Chairman at least ten (10) days prior to the scheduled hearing date a written request for a subpoena setting forth the name and address of the party to be subpoenaed, and identifying any evidence to be produced. Upon endorsement of a subpoena by the Chairman, the same shall be delivered to the Chief of Police for service by any police officer of the City. If the witness does not reside in the City, the Chairman shall issue a written request that the witness attend the hearing.

**(d)** Upon agreement of all parties, the testimony of any person may be taken by deposition or written interrogatories. Unless otherwise agreed, the deposition shall be taken in a manner consistent with Rules 26-33 of the Tennessee Rules of Civil Procedure, with the Chairman to rule on such matters as would require a ruling by the court under said rules.

**(e)** The party at such hearing bearing the affirmative burden of proof shall first call his witnesses, to be followed by witnesses called by other parties, to be followed by any witnesses which the Board may desire to call. Rebuttal witnesses shall be called in the same order. The Chairman shall rule on any evidentiary questions arising during such hearing, and shall make such other rulings as shall be necessary or advisable to facilitate an orderly hearing subject to approval of the Board. The Board, the Superintendent, or his representative, and all parties shall have the right to examine any witness. The Board shall not be bound by or limited to rules of evidence applicable to legal proceedings.

**(f)** Any person aggrieved by any order or determination of the Superintendent may appeal said order or determination reviewed by the Board under the provisions of this Section. A written notice of appeal shall be filed with the Superintendent and with the Chairman, and said notice shall set forth with particularity the action or inaction of the Superintendent complained of and the relief being sought by the person filing said appeal. A special meeting of the Board may be called by the Chairman upon the filing of such appeal, and the Board may in its discretion suspend the operation of the order or determination of the Superintendent appealed from until such time as the Board has acted upon the appeal. Provided, however, that actions and determinations of the Superintendent under the provisions of Section 32-51 (e) through (i) inclusive shall not be subject to review under this section.

**(g)** The Vice-Chairman or the Chairman pro tem shall possess all the authority delegated to the Chairman by this section when acting in his absence or in his stead.

**(h)** Any person aggrieved by any final order of determination of the Board hereunder shall have judicial review by common law writ of certiorari.

## SECTION 32-55.
## PENALTIES FOR VIOLATIONS OF ARTICLE PERMIT CONDITIONS, OR ORDER.

**(a)** Any person who violates any provision of this article including but not limited to the following violations:

(1) Violates an effluent standard or limitation;

(2) Violates the terms or conditions of a wastewater discharge permit;

(3) Fails to complete a filing or report requirement;

(4) Fails to perform or properly report any required monitoring;

(5) Violates a final order or determination of the Wastewater Regulations Board or the Superintendent; or

(6) Fails to pay any established sewer service charge or industrial cost recovery charge;

shall be guilty of a misdemeanor and, upon conviction, is punishable by a fine in an amount not to exceed Fifty Dollars ($50.00).

**(b)** Each separate violation shall constitute a separate offense and upon conviction, each day of violation shall constitute a separate offense.

**Section 2.** If any part, section, subsection, sentence, clause or phrase of this Ordinance is for any reason declared to be unconstitutional or otherwise invalid by any court of competent jurisdiction, such decisions shall not affect the validity of the remaining portions of this Ordinance.

**Section 3.** That this Ordinance shall take effect two (2) weeks from and after its passage, as provided by law.

PASSED on Third and Final Reading on December 12, 1978.

CHARLES A. "Pat" ROSE
Mayor

PAUL F. CLARK
Commissioner

Approved as to
Form & Legality
General Counsel

Appendix B

## ORDINANCE NO. 270

AN ORDINANCE ESTABLISHING REGULATIONS FOR THE INTERCEPTION, TREATMENT, AND DISPOSAL OF SEWAGE AND INDUSTRIAL WASTES AND THE CONTROL OF WASTE WATER, REQUIRING CHARGES TO BE MADE THEREFOR, AND FIXING PENALTIES FOR THE VIOLATION OF SAID REGULATIONS

Introduced by Director **Nahas** ; Seconded by Director **Wright**

BE IT ENACTED by the Board of Directors of EAST BAY MUNICIPAL UTILITY DISTRICT:

## TITLE I
## GENERAL

### Section 1
### Short Title

This ordinance shall be known as the "WASTE WATER CONTROL ORDINANCE".

### Section 2
### Purpose

Special District No. 1 of the EAST BAY MUNICIPAL UTILITY DISTRICT was formed and exists under the provisions of the Municipal Utility District Act (Public Utilities Code of the State of California, Division 6) for sewage disposal service within its boundaries. Sewage disposal facilities have been constructed for the interception, treatment, and disposal of sewage and industrial wastes originating within its boundaries.

The purpose of this ordinance is to regulate the interception of sewage and industrial wastes and to control waste water to provide the maximum public benefit of the sewage disposal facilities of the District. The regulations shall include provisions for source control in order to monitor and control quantity, quality, and flow of sewage and industrial waste. The regulations shall require charges for use of sewage disposal facilities of the District which are designed to achieve an equitable recovery of the capital and operating costs of such facilities. The regulations shall include provisions for enforcement and penalties for violations.

## Section 3
## Definitions

For the purposes of this ordinance, unless the context specifically indicates otherwise, the meaning of terms used shall be as follows:

a. "Business Classification Code" (BCC) - A classification of dischargers based on the 1972 Standard Industrial Classification Manual, Bureau of the Budget of the United States of America.

b. "Chlorine Demand" - The amount of chlorine required to produce a free chlorine residual of 0.1 mg/l after a contact time of 15 minutes as measured by the Iodometric Method on a sample at a temperature of 20°C in conformance with the Standard Method.

c. "Community Sewer System" - The sewers owned and operated by public agencies within the boundaries of the District which are connected to an interceptor of the District. A "community sewer" is that portion of a community sewer system which receives waste water from the side sewer of a discharger.

d. "Contamination" - An impairment of the quality of the waters of the State by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease.

e. "Critical Industry" - A discharger whose waste water requires special regulation or contains industrial wastes requiring source control or whose average waste water strength cannot be established on a business classification basis.

f. "Discharger" - Any person who discharges or causes the discharge of waste water to a community sewer system.

g. "District" - Special District No. 1 of the East Bay Municipal Utility District.

h. "General Manager" - The General Manager of the East Bay Municipal Utility District.

i. "Interceptor" - An intercepting sewer found and determined by the Board of Directors of the District to be such and owned and operated by the District.

j. "Industrial Waste" - Includes any nondomestic liquid or semisolid wastes from any producing, manufacturing, or processing operation of whatever nature.

k. "Manager" - Manager of the Water Pollution Control Department of the District, or his designated representative.

l. "Nuisance" - A discharge of waste water in violation of District regulations or orders, or which is or could be harmful to or unreasonably affect the sewage disposal facilities of the District, or which impairs or unreasonably affects the operation and maintenance of such facilities, or which violates quantity, quality, or flow standards adopted by the District, and all waste water discharges which unreasonably affect the quality of the District's treatment plant effluent in such a manner that receiving water quality requirements established by law cannot be met by the District.

m. "Person" - Any individual, partnership, firm, association, corporation, or public agency, including the State of California and the United States of America.

n. "Pollution" - An alteration of the quality of the waters of the State by waste to a degree which unreasonably affects (1) such waters for beneficial use or (2) facilities which serve such beneficial uses.

o. "Premises" - A parcel of real property, or portion thereof, including any improvements thereon, which is determined by the District to be a single unit for purposes of receiving, using, and paying for sewage disposal service. In making this determination, the District shall take into consideration such factors as whether the unit could reasonably be subdivided, number and location of side sewers, and whether the unit is being used for a single activity and, if not, what is the principal activity for sewage disposal services, but in any case the District determination shall be final.

p. "Public Agency" - A city or a sanitary district located within the boundaries of a special district.

q. "Receiving Water Quality Requirements" - Requirements for District's treatment plant effluent established by law or by State or Federal regulatory agencies for the protection of receiving water quality. "Requirements" shall include effluent limitations, and waste discharge standards, requirements, limitations, or prohibitions which may be established or adopted from time to time by State or Federal laws or regulatory agencies.

r. "Sewage" - The water-borne wastes derived from human habitation and use of buildings for residential, business, institutional, and industrial purposes.

s. "Sewage Disposal Purposes" - The acquisition, construction, enlargement, operation, and maintenance of intercepting sewers, sewage treatment works, pumping plants, outfall sewers, and appurtenances by a special district.

t. "Sewage Disposal Facilities" - Includes intercepting sewers, sewage treatment works, pumping plants, outfall sewers, and appurtenances constructed, operated, and maintained by a special district created for sewage disposal purposes. As used in this ordinance, unless the context specifically indicates otherwise, "District Facilities" shall mean sewage disposal facilities of a special district.

u. "Side Sewer" - A sewer conveying the waste water of a discharger from a residence, building, or other structure to a community sewer, including direct connections to a community sewer where permitted by the public agency.

v. "Standard Methods" - Procedures described in the latest edition of "Standard Methods for the Examination of Water and Wastewater" as published by the American Public Health Association, the American Water Works Association, and the Water Pollution Control Federation. Elements of waste water strength shall be measured by Standard Methods unless otherwise expressly stated.

w. "Suspended Solids" - The concentration of nonfilterable residue dried at 103° to 105°C on a filter in conformance with the Standard Method.

x. "Waste" - Includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation of whatever nature.

y. "Waste Water" - All sewage, industrial, and other wastes and waters, whether treated or untreated, discharged into or permitted to enter a community sewer system connected to a District interceptor, for treatment in sewage disposal facilities of a special district. As used in this ordinance, unless the context specifically indicates otherwise, "waste water" shall mean sewage and industrial waste discharged to a community sewer by any person.

z. "Waste Water Strength" - The quality of waste water discharged as measured by its elements, including its constituents and characteristics.

## Section 4
## Connection to Interceptor

The District will not permit direct connections of or accept direct contributions of waste water from sewers other than community sewers.

Before any connection of a community sewer is made to an interceptor, there shall be filed with the District, in duplicate, an application signed by the public agency owning the community sewer to be connected. The application shall be in a form approved and supplied by the District, and shall contain such information and data as may be required from time to time by the District.

The connecting of community sewers will be performed by the public agency at its expense in accordance with District requirements and subject to approval and inspection by the District.

### Section 5
### Storm, Drainage, and Ground Water Prohibition - Interim Provisions

Existing District regulations prohibit the discharge of storm, drainage, and ground water to community sewer systems and are intended to complement similar existing public agency rules, regulations, and ordinances which prohibit such discharges. The District and public agencies are cooperating to develop a joint program to eliminate the maximum feasible wet weather flow from community sewer systems. The District storm water prohibitions set forth in District Resolution No. 14979 shall remain in force as interim provisions until the completion, adoption, and implementation of said joint storm water program.

### Section 6
### Unusual Conditions

Notwithstanding any provision of this ordinance to the contrary, District and any discharger or public agency may enter into an agreement where unusual conditions compel special terms and conditions and charges for the interception, treatment, and disposal of the waste water by the District.

## TITLE II
## REGULATION OF WASTE WATER DISCHARGES

### Section 1
### Permissible Discharges

Waste water may be discharged into community sewers for interception, treatment, and disposal by the District provided that such waste water does not contain substances prohibited, or exceed limitations of waste water strength, set forth in this ordinance; and provided further that the discharger pays all District sewage disposal charges and is in compliance with all terms of this ordinance, including the permit provisions if applicable.

### Section 2
### Prohibited Discharges

a. General Prohibition. No person shall discharge waste water into a community sewer which will result in contamination, pollution, or a nuisance.

b. Prohibited Effects. No person shall discharge waste water into a community sewer if it contains substances or has characteristics which, either alone or by interaction with other waste waters, cause or threaten to cause:

(1) Damage to District facilities.

(2) Interference with or impairment of the operation or maintenance of District facilities.

(3) Obstruction of flow in sewers or interceptors.

(4) Danger to life or safety of any person.

(5) Interference with, or overloading of, treatment or disposal processes.

(6) Flammable or explosive conditions at or near District facilities.

(7) Waste water or any other by-products of the treatment process to be unsuitable for reclamation and reuse, or interfere with any processes for reclamation.

(8) Noxious or malodorous gases or odors at or near District facilities.

(9) Discoloration or any other condition in the quality of the District's treatment plant effluent in such a manner that receiving water quality requirements established by law cannot be met by the District.

(10) Conditions at or near District facilities which violate any statute or any rule, regulation, or ordinance of any public agency or State or Federal regulatory body.

c. Prohibited Substances. No person shall discharge the following to a community sewer:

(1) Waste water which is not polluted and meets requirements for and is acceptable for discharge to storm sewers or to receiving waters of the State; provided that the Manager may grant permission for the discharge of unpolluted waste waters which comply with regulations of the public agency owning the community sewer.

(2) Garbage, except ground garbage from residential and commercial premises where food is prepared and consumed.

d. Prohibited Locations. Except for sewer construction and maintenance by public agencies and contractors, no person shall discharge any waste water directly into a manhole or other opening in a community sewer system other than through side sewers approved by the public agency owning the system; provided that the Manager may grant permission for such direct discharges, upon written application, at locations approved by the public agency and upon payment of applicable sewage disposal charges to the District.

## Section 3
## Limitations on Discharges

a. Waste Water Strength Limits. No person shall discharge waste water into a community sewer if the strength of the waste water exceeds the following:

| | | |
|---|---|---|
| (1) | Arsenic | 2 mg/l |
| (2) | Cadmium | 1 mg/l |
| (3) | Chlorinated Hydrocarbons (total identifiable) | .5 mg/l |
| (4) | Copper | 5 mg/l |
| (5) | Cyanide | 5 mg/l |
| (6) | Iron | 100 mg/l |
| (7) | Lead | 2 mg/l |
| (8) | Mercury | .05 mg/l |
| (9) | Nickel | 5 mg/l |
| (10) | Oil and Grease | 250 mg/l |
| (11) | pH not less than | 5.5 |
| (12) | Phenolic compounds | 100 mg/l |
| (13) | Silver | 1 mg/l |
| (14) | Temperature | 150 °F |
| (15) | Total Chromium | 2 mg/l |
| (16) | Zinc | 5 mg/l |

b. Quantity and Rate of Flow Limits. No person shall discharge waste water into a community sewer in quantities or at rates of flow which may have an adverse or harmful effect on or overload District facilities or cause excessive or additional District treatment costs.

c. Radioactive Limits. No person shall discharge or cause to be discharged any radioactive waste water into a community sewer except when the person is authorized to use radioactive material by the Atomic Energy Commission or other governmental agency empowered to regulate the use of radioactive materials and when the waste water is discharged in strict conformity with current Atomic Energy Commission regulations and recommendations for safe disposal and in compliance with all rules and regulations of State and local regulatory agencies.

# TITLE III
# DISCHARGER CLASSIFICATION AND CALCULATION OF SEWAGE DISPOSAL CHARGES

## Section 1
## Classification

All dischargers shall be classified for sewage disposal purposes in accordance with the principal activity conducted upon the premises, as determined by the Manager. The purpose of classification is to facilitate the regulation of waste water dischargers based on quality, quantity, and flow, to provide an effective means of industrial waste source control, and to establish a system of sewage disposal service charges based upon flow and waste strength which will insure an equitable recovery of District capital and operating costs.

## Section 2
## Calculation of Sewage Disposal Charge

All dischargers shall pay a use charge for District sewage disposal services. The charges will reflect the quantity, quality, and flow of the waste water of the dischargers and will be based on District capital and operating costs to intercept, treat, and dispose of waste water.

Flat charges, unit charges, and classification charges shall be established by the District from time to time and set forth in a schedule of rates and charges. Unit charges will be established for each element of waste water strength which incurs District costs of interception, treatment, and disposal. Commencing on the effective date of this ordinance, these elements will be suspended solids, oil and grease, and chlorine demand. Unit charges for additional elements, including chemical oxygen demand, may be established from time to time as the District incurs additional costs for interception, treatment, and disposal. A unit charge for volume will also be established which reflects District costs of interception, treatment, and disposal of total volume of waste water.

The total sewage disposal charge for each discharger shall be calculated as set forth herein.

a. Dischargers from Residential Premises with Four or Less Dwelling Units. A uniform flat monthly charge per dwelling unit for sewage disposal service will be made to dischargers of waste water in this class regardless of the source of water.

b. Dischargers from Residential Premises with Five or More Dwelling Units and Dischargers from Nonresidential Premises. All dischargers of waste water in this class will be assigned a business classification code depending on the principal activity conducted on the premises. All dischargers conducting the same principal activity will receive the same business classification code. The Manager shall determine the typical waste water strength for each business classification code, and each discharger within that classification will be assumed, for sewage disposal charge purposes, to have the same typical waste water strength.

A classification charge shall be established by the District for each business classification code which will be based on the unit charges for the elements of waste water strength, including volume, as applied to the typical waste water strength of the particular classification.

The sewage disposal charge to a discharger in this class will be calculated by multiplying the classification charge by the volume of water used by the discharger. Any discharger in this class who is issued a waste water discharge permit will thereafter pay a sewage disposal charge as a permit discharger.

c. Permit Dischargers. Dischargers of waste water who are required to obtain a permit under the provisions of this ordinance, excluding permits issued solely for flow estimation, shall pay a sewage disposal charge which shall be the sum of the products of the following: The unit charge for each element of waste water strength multiplied by the allowable limits of each element set forth in the permit multiplied by the volume of water used; and the unit charge for volume multiplied by the volume of water used as determined herein. The sewage disposal charge for permit dischargers, including both waste water strength and water use, shall be calculated by an apportionment by the Manager of strength and use to each side sewer at the discharger's premises.

Dischargers requiring permits solely for flow estimation shall pay a sewage disposal charge calculated by multiplying the classification charge by the volume of water determined by the estimation.

In addition to a sewage disposal charge, the permit discharger shall pay all applicable District permit charges.

Commencing on the effective date of this ordinance, all dischargers required to obtain a permit shall pay a sewage disposal charge in accordance with their business classification code until a permit is issued. Dischargers receiving flow estimations on the effective date of this ordinance shall apply and be issued a permit before the expiration of the existing flow estimate.

## Section 3
## Determination of Water Used

The applicable volume of water upon which sewage disposal charges shall be based will be determined as follows:

a. Water Discharged to Community Sewer. For premises where no portion of the water received from any source is consumed in the principal activity of the discharger or is removed from the premises by means other than community sewers, the sewage disposal charge shall be applied against the total amount of water used from all sources. The amount of East Bay Municipal Utility District water received will be determined by registration on an East Bay Municipal Utility

District meter. The amount of water used from other sources will be determined by means of a meter installed at the expense of the discharger and approved by the District or by an estimate prepared by the District, after obtaining a permit in accordance with this ordinance. The discharger shall report to the District the sources of all water used at his premises other than that supplied by the East Bay Municipal Utility District and shall notify the District of any changes in such sources.

b. Water Not Discharged to Community Sewer. For premises where a portion of the water received from any source does not flow into community sewers, because of the principal activity of the discharger or removal by other means, the charge for sewage disposal service will be applied against the volume of water discharging from such premises into community sewers. Written notification and proof of the diversion of water must be provided by the discharger if he is to avoid application of the sewage disposal charge against the total amount of water used from all sources. He may be required to install a meter, of a type and at a location approved by the District and at his own expense, to determine the quantity of water flowing into community sewers. However, where it is impractical to install meters and where the quantity of water diverted from the sewers amounts to more than 20 percent of the total water used, then the charge for sewage disposal service may be based upon an estimate prepared by the District, after obtaining a permit in accordance with this ordinar

## TITLE IV
## WASTE WATER DISCHARGE PERMITS

### Section 1
### Permit Requirement

All dischargers, other than residential, whose waste water requires special regulation or contains industrial wastes requiring source control and all dischargers requiring an estimation of water use shall secure a waste water discharge permit.

a. Mandatory Permits. All dischargers in the following categories must obtain a waste water discharge permit:

(1) Dischargers who are designated as critical industries and whose water use for any two consecutive months during the preceding twelve-month period has equalled or exceeded a cumulative two-month volume of 1500 hundreds of cubic feet. A critical industry is a discharger whose waste water requires special regulation or contain industrial wastes requiring source control or whose average waste water strength cannot be established on a business classification basis. Critical industries for the purposes of this ordinance are all dischargers whose business classification code is within the type of industries classified in Division D, Standard Industrial Classification Manual, Bureau of the Budget of the United States of

America, and also the following business classification codes: Mining; Construction; Railroad Transportation; Local and Suburban Transit; Water Transportation; Air Transportation; Industrial Laundries; Battery Service; Electric, Steam, and Natural Gas Companies; Sanitary Collection and Disposal Services; Laboratories; and Fumigating Services.

(2) Dischargers whose average waste water strength cannot be established on a business classification basis, because of seasonal or other variations in operations.

(3) Dischargers whose waste water strength exceeds the normal range of waste water strength for the business classification code to which the discharger is assigned.

(4) Dischargers using an unmetered source of water.

(5) Other dischargers determined by the Manager to require special regulation or source control.

b. Optional Permits. The Manager may issue waste water discharge permits to any discharger, after application in accordance with the terms of this Title, in the following categories:

(1) A discharger who requests a District estimation of waste water flow because of the unmetered diversion of more than 20 percent of the metered water consumption not being discharged to a community sewer.

(2) Any person whose discharge is less than the normal range of waste water strength for the business classification code to which he is assigned because of pretreatment, process changes, or other reasons.

## Section 2
## Application

Dischargers seeking a waste water discharge permit shall complete and file with the Manager a District application form, accompanied by the applicable District fees, within 60 days of notification by the Manager, unless such time is extended for good cause. The application may require the following information: Estimated waste water strength, estimated waste water flow, average and peak waste water discharge flow for each side sewer; locations of side sewers, sampling points, and pretreatment facilities; description of activity, facilities, and plant process on the premises, including raw materials, processes and types of materials which are or could be discharged; total product produced, by type; number and type of employees; and any other information the Manager shall deem necessary to evaluate the permit application.

The Manager will evaluate the data furnished by the discharger and may require additional information. After evaluation and approval of the data furnished, the Manager will determine the allowable average and maximum limits on the elements of the waste water strength and flow and shall apportion the waste water strength and flow to each side sewer at the discharger's premises. The Manager may issue a waste water discharge permit subject to terms and conditions as provided herein.

## Section 3
## Terms and Conditions of Permit

a. Terms. All waste water discharge permits shall be expressly subject to all provisions of this ordinance and all rates and charges established by the District. All permits shall be valid for one year and must be renewed annually; provided that the Manager may establish renewal dates from twelve to twenty-four months after issuance of the initial permits issued after the effective date of this ordinance. All permits, except those issued solely for estimation of water used, shall contain the following terms:

(1) The typical waste water strength and water use for the flow in each side sewer.

(2) Average and maximum limits on the elements of the discharger's waste water strength.

b. Conditions. Waste water discharge permits may contain any or all of the following conditions:

(1) Limits on rate and time of discharge or requirements for flow regulation and equalization.

(2) Requirements for inspection and sampling facilities, including District access to such facilities.

(3) Monitoring program which may include: Sampling locations; frequency and method of sampling; number, types and standard of tests; and establishing a reporting schedule. The discharger assigned a monitoring program in conformance with this ordinance shall pay all applicable District charges.

(4) Submission of technical reports or discharge reports.

(5) Maintenance of plant records relating to waste water discharges, as specified by the Manager, and affording District access thereto.

(6) Other conditions as deemed appropriate by the Manager to insure compliance with this ordinance or the terms and conditions of the permit.

### Section 4
### Change of Permit Terms and Conditions

The District may change the terms and conditions of a waste water discharge permit, including changing the average limits on the elements of waste water strength, from time to time as circumstances may require. The District shall allow a discharger reasonable time to comply with any District required changes in the permit except that a change in average limits of waste water strength shall immediately affect calculation of the sewage disposal charge.

### Section 5
### Transfer of Permit Prohibited

A waste water discharge permit shall not be assigned or transferred.

### Section 6
### Termination

The Manager may terminate any waste water discharge permit for violation of the terms and conditions of the permit or the provisions of this ordinance. A permit shall be terminated by the Manager if the discharger exceeds the maximum allowable discharge limits. A discharger whose permit has been terminated shall apply for a new permit within 30 days of notice of termination.

Any discharger whose permit has been terminated shall pay sewage disposal charges based upon his former permit or on his assigned business classification code, whichever is higher, until a new permit has been applied for, approved, and issued.

## TITLE V
## ADMINISTRATION

### Section 1
### Authority of Manager

The Manager is charged with responsibility for District's waste water control program and the administration and enforcement of the provisions of this ordinance.

### Section 2
### Waste Water Source Control Requirements

In order to effectively administer and enforce the provisions of these regulations, the Manager may require any discharger to comply with any or all of the following requirements:

a. Discharge Reports. The Manager may require discharge reports, including but not limited to questionnaires, technical reports, sampling reports, and test analyses, and periodic reports of waste water discharge.

When a report filed by a person pursuant to this section is not adequate in the judgment of the Manager, he may require such person to supply such additional information as the Manager deems necessary.

The discharge report may include, but not be limited to, nature of the process, volume and rates of waste water flow, elements, constituents, and characteristics of the waste water, together with any information required in an application for waste water discharge permit.

b. Monitoring Programs. The Manager may require of dischargers such technical or monitoring programs, including the submission of periodic reports, as he deems necessary, provided that the burden, including costs, of such programs and reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained therefrom. The discharger shall pay the applicable District charge for the monitoring program, in addition to the sewage disposal and other charges established by the District.

The monitoring program may require the discharger to conduct a sampling and analysis program of a frequency and type specified by the Manager to demonstrate compliance with prescribed waste water discharge limits. The discharger may either:

(1) Conduct his own sampling and analysis program provided he demonstrates to the Manager that he has the necessary qualifications and facilities to perform the work; or

(2) Engage a private consulting firm or laboratory, certified by the State of California, Department of Public Health.

c. Inspection Facilities. The Manager may require any non-residential discharger to construct, at his own expense, a sampling facility or inspection manhole together with necessary related measuring and sampling equipment, in accordance with construction standards and specifications of the public agency owning the community sewer. The sampling facility or inspection manhole shall be constructed on the side sewer of the discharger and within the public right of way at a location approved by the District and the public agency owning the community sewer; provided that the Manager may permit the installation of such facilities on the premises of the discharger at a location which will permit District access to the facility at all times. Construction shall be completed within 60 days of written notification from the Manager, unless such time is extended by the Manager for good cause. The Manager may require the discharger to install such sampling facilities or inspection manholes on each side sewer.

d. Pretreatment Facilities. Pretreatment systems or devices may be required by the Manager to treat waste water prior to discharge to the community sewer when it is necessary to restrict or prevent the discharge to the community sewer of waste water having strength in violation of the prohibitions or exceeding the limits established by this ordinance, or to distribute waste water discharges over a period of time.

All pretreatment systems or devices shall be approved by the Manager but such approval shall not relieve a discharger of the responsibility for taking all steps necessary to comply with waste water limitations established by the District. All required pretreatment equipment.shall be installed and operated at the discharger's expense.

## Section 3
## Trade Secrets

When requested by the person furnishing a report or permit application or questionnaire, the portions of the report, or other document, which might disclose trade secrets or secret processes shall not be made available for inspection by the public but shall be made available to governmental agencies for use in making studies; provided, however, that such portions of a report, or other document, shall be available for use by the District or the State or any State agency in judicial review or enforcement proceedings involving the person furnishing the report.

## Section 4
## District Inspection

The District may inspect the facilities of any discharger to ascertain whether the provisions of this ordinance are being met and the waste water discharge limits are being complied with. Such inspection shall be made with the consent of the owner or possessor of such facilities or, if such consent is refused, with a warrant duly issued pursuant to the procedure set forth in Title 13 (commencing with Section 1822.5) of Part 3 of Code of Civil Procedure; provided, however, that in the event of an emergency affecting the public health or safety such inspection may be made without consent or the issuance of a warrant.

To verify the waste water flows and strength reported by dischargers or to determine compliance with this ordinance, inspection, measurement, and sampling may be conducted from time to time by the District. The District shall have the right to install, maintain, and operate necessary sampling and measuring equipment on the premises of discharger.

## Section 5
## New Connections

Dischargers will be assigned a business classification code and informed of the applicable prohibitions, limits or conditions, and the applicable rates and charges, governing sewage disposal service at the time of application for water service from East Bay Municipal Utility District.

All nonresidential dischargers seeking a new side sewer connection to a community sewer and any new discharger requiring information prior to applying for water service should contact the Manager. The Manager will inform the discharger of the regulations governing sewage disposal service and the applicability of requirements for inspection, sampling, or pretreatment facilities.

# TITLE VI
# ENFORCEMENT AND PENALTIES

## Section 1
## Manager's Enforcement

The Manager may adopt procedures and rules for the implementation and administration of this ordinance. The Manager shall enforce the provisions of this ordinance, including requirements established or permits issued hereunder, as provided herein.

a. Requiring Discharger to Submit Schedule of Remedial or Preventive Measures. When the Manager finds that a discharge of waste water is taking place or threatening to take place that violates or will violate prohibitions or limits prescribed by this ordinance or waste water source control requirements or the provisions of a waste water discharge permit, the Manager may require the discharger to submit for approval of the Manager, with such modifications as he deems necessary, a detailed time schedule of specific actions the discharger shall take in order to correct or prevent a violation of requirements.

b. Issuance of Cease and Desist Orders. When the Manager finds that a discharge of waste water is taking place or threatening to take place in violation of prohibitions or limits of this ordinance or wastewater source control requirements or the provisions of a waste water discharge permit, the Manager may issue an order to cease and desist and direct that those persons not complying with such prohibitions, limits, requirements, or provisions (1) comply forthwith, (2) comply in accordance with a time schedule set by the Manager, or (3) in the event of a threatened violation, take appropriate remedial or preventative action.

## Section 2
## Appeal Procedure

Any permit applicant, permit holder, or other discharger affected by any decision, action, or determination, including cease and desist orders, made by the Manager in interpreting or implementing the provisions of this ordinance, or any permit issued hereunder, may file with the Manager a written request for reconsideration within 10 days of such decision, action, or determination, setting forth in detail the facts supporting the request. The Manager may elect to hold a hearing on the request. The request for reconsideration shall be acted upon by the Manager within 10 days from the date of filing or the close of the reconsideration hearing. The decision, action, or determination shall remain in effect during such period of review by the Manager.

If the ruling made by the Manager is unsatisfactory to the person requesting reconsideration, he may, within 10 days after notice of the action by the Manager, file a written appeal to the General Manager.

The written appeal shall state all pertinent aspects of the matter, shall include the hearing record if one was requested, and shall be accompanied by a filing fee, as set forth in District's schedule of rates and charges. Within 30 days after the written appeal is received, the General Manager shall hold a hearing after due notice to the appellant. The General Manager may establish rules and regulations governing the hearing of such appeals. The General Manager shall make a final ruling on the appeal within 10 days after close of the hearing. The decision, action, or determination shall remain in effect during such period of review by the General Manager.

If the decision of the General Manager is unsatisfactory to the person appealing, he may file a written appeal to the Board of Directors of the District within 10 days after receipt of the decision.

The Board of Directors may hear the appeal or refer the matter to a neutral hearing officer for an advisory opinion. The Board of Directors shall make a final ruling on the appeal within 10 days of the close of the hearing or receipt of the advisory opinion. The decision, action, or determination shall remain in effect during such period of review by the Board of Directors.

The Manager may adopt rules and regulations to implement the provisions of this section.

## Section 3
## Criminal Penalties

Any person who intentionally discharges waste water in any manner, in violation of any order issued by the Manager, which results in contamination, pollution, or a nuisance, as defined in this ordinance, is guilty of a misdemeanor.

## Section 4
## Civil Enforcement Remedies and Penalties

The District may pursue any of the alternative civil remedies herein against any discharger who violates the provisions of this ordinance.

a. Damage to Facilities. When the discharge of waste water causes an obstruction, damage, or other impairment to District disposal facilities, the Manager may assess a charge against the discharger for the work required to clean or repair the facility, and add such charge to the discharger's sewage disposal charge.

b. Six Thousand Dollar Per Day Fine. Any person who intentionally or negligently violates any order issued by the Manager for violation of provisions of this ordinance or regulating or prohibiting discharge of waste water which causes or threatens to cause a condition of contamination, pollution, or nuisance, as defined in this ordinance, may be liable civilly in a sum not to exceed Six Thousand Dollars ($6,000.00) for each day in which such violation occurs.

The attorney of the District, upon request of the Board of Directors of the District, shall petition the Superior Court to impose, assess, and recover such sums.

c. Injunction. Whenever a discharge of waste water is in violation of the provisions of this ordinance or otherwise causes or threatens to cause a condition of contamination, pollution, or nuisance, the District may petition the Superior Court for the issuance of a preliminary or permanent injunction, or both, as may be appropriate, restraining the continuance of such discharge.

d. Termination of Service. The District may terminate or cause to be terminated sewage disposal or water service to any premise if a violation of any provision of this ordinance pertaining to control of waste water is found to exist or if a discharge of waste water causes or threatens to cause a condition of contamination, pollution, or nuisance, as defined in this ordinance. This provision is in addition to other statutes, rules, or regulations authorizing termination of service for delinquency in payment, or for any other reason.

## TITLE VII
## SEVERABILITY

If any provision of this ordinance, or the application thereof to any person or circumstance, is held invalid, the remainder of the ordinance, or the application of such provision to other persons or circumstances, shall not be affected thereby.

## TITLE VIII
## EFFECTIVE DATE

This ordinance shall become effective on January 1, 1973.

All resolutions in conflict herewith are hereby rescinded, with the express exception that Paragraph No. 3 of Resolution No. 14979, prohibiting the discharge of storm water, shall remain in full force and effect.

President

ATTEST:

John H. Plumb
Secretary

I hereby certify that the foregoing Ordinance was duly and regularly introduced at the Regular Meeting of the Board of Directors of the East Bay Municipal Utility District, held on Tuesday, November 14, 1972, at the offices of said District, 2130 Adeline Street, Oakland, California; that thereupon, after being read, further action was postponed until the Regular Meeting of the said Board of Directors held at the same place on Tuesday, **December 12, 1972**, at which time the same was finally adopted by the following vote:

| | |
|---|---|
| AYES: | **Directors Wright, Carrington, Robinson, Nahas and President Krueger** |
| NOES: | **None** |
| ABSENT: | **None** |

John H. Plumb
Secretary